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Your Food and Your Health

Books by Richard Carter

THE GENTLE LEGIONS
THE DOCTOR BUSINESS
THE MAN WHO ROCKED THE BOAT (*with William J. Keating*)

Your FOOD

and your HEALTH

Startling scientific discoveries about diet, digestion, and nutrition, and how you can benefit from them

by Richard Carter

With a concluding chapter by Stewart Wolf, M.D.

HARPER & ROW, PUBLISHERS

New York, Evanston, and London

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FIRST EDITION

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To the memory of
Harold G. Wolff, M.D.

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If a man has stomach pain, let that man kneel on his feet and have burning cinnamon juice poured over him. . . . If the trouble recurs, let him kneel and have cold water flow over him. If it happens again, place his head downwards and his feet up, strike his cheek hard, rub him violently, and say to his stomach, "Be Good!"

—Ancient Babylonian Remedy

Your Food and Your Health

Introduction

How to Live with Your Stomach

Biological scientists are beginning to solve some ancient mysteries. They now understand the nature of health and illness with a clarity never before achieved. Unfortunately, they have not yet managed to communicate the news to the world at large. Superstition and obsolete medical lore continue to govern man's ideas about his body and its frailties.

Countless millions of human beings suffer needlessly from illnesses that could be treated successfully by modern medicine. The suffering is especially needless among the millions who have the afflictions with which this book is concerned. Many cases of digestive difficulty, obesity and other conditions traditionally associated with food can be cured or relieved, often rather easily, yet successful treatment remains rare. Instead we persist in creating problems where none exist, meanwhile overlooking the problems that do exist.

My own small circle of friends and relatives includes the following representative types:

The lady who eats no oranges or tomatoes (too acid), and accepts neither leafy vegetables nor raw fruit (too harsh for the sensitive intestines).

The man who likes a glass of milk at bedtime for his heartburn, but is forbidden it because of his high blood pressure.

The man who refuses butter, having been advised that eating animal fats leads to heart failure.

The lady who cannot seem to lose weight no matter how little food she consumes.

The man whose ulcer ignites like a flame thrower whenever he eats fried food.

The boy who is nauseated by cucumber and watermelon.

The man who gets indigestion from the luncheons served in his firm's executive dining room.

The man whose life has been spoiled by "irregularity."

A similar list can be assembled by any reader who bothers to survey the dietary peculiarities of his own family and friends. Sick or well, young or old, we have been trained to believe that food causes illness, or cures it, or both. The belief is almost invariably wrong.

Through no great fault of its own, the public gets little scientific information about diet and digestion, and even less about the nature of health. The prevailing view of such matters is fogged by old wives' tales, unsubstantiated medical theory, faddism, and especially by the remorseless quackery of food and drug advertisers. Our innocence of science accounts for our general pessimism about the efficiency, adaptability and stamina of the human body. The same unawareness explains our widespread fear of the digestive and nutritional consequences of normal eating. Small wonder that our wish for health is diverted into a vain, costly stampede for miraculously prophylactic foods and stupendously curative drugs, newer but not necessarily more efficacious varieties of which are produced for sale in endless, wasteful succession.

During the early decades of this century appreciable numbers of Americans were still suffering from nutritional deficiencies such as pellagra and rickets. In discovering and demonstrating the vitamins that prevent such diseases, men like Joseph Goldberger, E. V. McCollum and Harry Steenbock were protagonists in one of the most brilliant chapters in the history of medical science. These great nutritionists and those who elaborated and extended their work showed, among other things, that any nation fortunate enough to have access to a reasonably varied diet could eradicate malnutrition. Any individual who ate balanced meals could dismiss nutritional problems from his mind.

The message was clear enough but seems to have been garbled in transmission. In a nation like the United States, where most people were able to eat adequately, the findings of nutritional science should have put an end to dietary anxieties. But the opposite happened. Although nutritionists stressed the simple, positive aspects of eating, promoters used their greater influence to accentuate the negative and soon manipulated the American people into an orgy of dietary tinkering.

Thus, millions of us embrace fads like the recent safflower-oil-capsule promotion and the slightly less recent honey-and-vinegar binge. Furthermore, we now spend more than two billion dollars a year on packaged vitamins, tonics, "health foods," stomach sweeteners, laxatives, reducing compounds, polyunsaturated cooking oils and other merchandise we seldom need but which, we are told, will protect us from the hazards of ordinary food and drink.

To suggest the magnitude of the abyss that separates conventional notions of diet and digestion from scientific fact, here is a list of statements which are widely regarded as true but are without foundation:

Gluttony is the sole cause of overweight.
Certain fats cause heart disease.
Ulcer patients need bland diets.

Foods cause high blood pressure.

A careless diet can ruin the stomach.

Some digestive disorders are purely physical and some are of emotional origin.

Functional stomach troubles are less serious than organic stomach troubles.

Cheese is binding.

Thorough chewing is essential to carefree digestion.

Acid stomach causes indigestion.

Constipation permits poisons to enter the bloodstream.

Poached eggs are more wholesome than fried eggs.

The average person should take vitamin pills as insurance against malnutrition.

The purpose of this book is to liberate its readers from misconceptions of that kind, from the erroneous theories on which the misconceptions depend, and from the needless anxieties, agonies and financial expenditures that so often follow. Although no book can treat illness, this one will equip the reader to make a more competent evaluation of whatever doctoring he may be getting or contemplating. Furthermore, the nature of diet and digestion is such that many readers with minor digestive miseries or small dietary qualms will break free of misery or qualm long before they have finished reading this book's review of such matters.

The weapons of deliverance are truths that have been known for years among certain physicians, medical-research investigators and other biological scientists, but will come as astonishing news to practically everyone else. For the purposes of this introduction, the most essential of these scientific truths can be summarized in the assertion that anyone capable of accepting certain facts about the human body and its health can establish peaceful, uncomplicated, casual relations with his digestive apparatus and with the food he deposits therein. This enviable state can usually be achieved without medication of any kind. Moreover, it can be

achieved without dietary deprivation, except in some cases of overweight (but not all), or food allergy (which is rarer than some people think), or acne (which is a special phenomenon), or sprue (which is rare), or certain heart and circulatory conditions (which require diets low in salt), or gall bladder trouble (painfully aroused by fat), or diabetes (low-sugar, low-starch diet).

Before the reader decides that he is being serenaded by a faker, a few words are in order about the origins of this book. It should have been written at least twenty years ago. A suitable occasion arose in 1943, when Dr. Stewart Wolf and the late Dr. Harold G. Wolff published a scientific monograph called *Human Gastric Function.* In that classic volume the scientists reported historic findings accumulated during years of research at New York Hospital–Cornell Medical Center. Their discoveries about diet, digestion and the nature of health were, of course, summarized for the general public by newspapers and news magazines. But there was a war on and the material did not get the kind of attention that might have revolutionized popular thinking about the inner workings of the human body. A book directed to the public could have made a difference. But there has been no such book until this one.

We have here an example of the sort of lag that characterizes the entire history of medical science and is equally familiar in the history of everything else. Helpful discoveries are seldom put to prompt, universal use. A hundred years after Edward Jenner discovered that he could prevent smallpox by inoculating the public with cowpox, certain doctors were still resisting the procedure on grounds that it might cause people to grow horns. More than half a century after the distinguished French physician Béclard demonstrated (in 1863) that it was senseless, or worse, to practice blood-letting on pneumonia patients, medical textbooks continued to advocate the discredited practice. Anyone over the age of forty-five can probably remember physicians drawing blood from pneumonia patients as recently as the 1920's.

My desire to write the present book dates from 1958, when I

read *Human Gastric Function,* met Dr. Stewart Wolf, and recognized that I was in the presence of knowledge which, if effectively publicized, could revise man's conceptions of diet and digestion while correcting his theories of health.

But the law of lags applies as forcefully to books as to anything else. The book, conceived in 1958 at the University of Oklahoma Medical School (where Dr. Wolf heads the department of medicine), languished on my agenda until the summer of 1962. Fortunately, Dr. Wolf was willing to help. He made himself available for dozens of interviews, supplying the scientific orientation, the historical perspective, the breadth of scope and, of course, numerous essential facts and anecdotes without which my own small supply of lore would have been inadequate and the lag would have continued to lag.

This book, then, transmits glad tidings from a sector of the scientific community to the rest of the world. Because the book is faithful to science, it is faithful to truth and states nothing as truth that has not been demonstrated under properly scientific conditions. Such guesses as the book contains are labeled for what they are.

There seems no reason to impose further delay on the establishment of tolerable relations between the reader and his digestive apparatus. The process consists of a deliberately informal and largely untechnical survey of those organs and their fascinating behavior. Inasmuch as the stomach and its cohorts function under the mandate of the body's interpretive, regulatory and adaptive mechanisms, we shall find ourselves making frequent excursions northward to the brain. We shall discover that digestive difficulty seldom originates as digestive difficulty and seldom improves if treated exclusively in terms of digestion.

Modern medicine treats the whole man.

Chapter 1

A Guided Tour

The ancient Mesopotamians believed that the stomach was the seat of human cunning. Certain Greeks saw the worthy organ as seat of the soul. Our civilization perceives no such glamour or dignity in the stomach: to us it is a seat of trouble. We deplore its eccentric reactions to food. We blush at its unseemly noises. We regret its uncongenial acid, which goes drip-drip-drip, causing us expensive pain and sorrow.

Although our estimate of the stomach is not much more accurate than the Mesopotamian or Greek, our pain and sorrow are real. The discomfort can be relied upon to persist until we obtain the only medicine that has any lasting effect against stomach trouble. That medicine, oddly enough, is knowledge. Therefore, a question: what is a stomach?

An amusing answer was given by the great British physician of the eighteenth century, William Hunter. Ridiculing a set of notions similar to those purveyed in today's drip-drip-drip television commercials, Hunter grumbled, "Some will have it that the stomach is a mill; others that it is a fermenting vat; others again, that it is a stew pan, but in my view of the matter it is neither a mill, a

fermenting vat nor a stew pan—but a stomach, gentlemen, a stomach."

Hunter's derision introduces an elementary fact that is overlooked as foolishly in our day as in his. To declare that the stomach is a stomach is to remind oneself that the organ is made neither of glass, metal nor plastic but of human tissue, and that it functions not as a household appliance but as an integral part of the living body. This means, among other things, that the performance of the stomach is governed, for better or worse, by the supreme sovereign of all organs—the highly fallible brain. No understanding of stomachs and their behavior can hope to approach the truth unless it reckons with the commerce that takes place between stomachs and brains. To know one's own stomach, in sickness and health, it is essential to acknowledge its transactions with one's particular brain.

Dr. Stewart Wolf tells of a woman who suffered for almost thirty years with disastrous sick headaches until her problem was disposed of by a feat of medical detection so swift, so dramatic and so triumphantly effective as to suggest that advanced science had joined forces with postgraduate witchcraft. Her agony ended when a doctor patted her hand, peered sincerely into her eyes and informed her that she was allergic to milk.

It took the woman only a few hours to demonstrate to her permanent satisfaction that the man was a genius. The merest taste of milk was enough to prostrate her with blinding head pains and melancholy stomach. She later discovered that her sensitivity was so extreme that she could not even eat pastries made with milk. Problem solved: all she had to do was avoid milk in any form.

She remained free of trouble for years, except on several occasions when her mischievous companions of the card table tried to fool her by pretending that the cakes they offered were devoid of milk. Having eaten a piece, and having become sick, the woman would remark wanly that practical jokers might be able to deceive *her* but nobody could hope to deceive her system, which was totally incompatible with milk.

Dr. Wolf was fascinated by the woman's story. He had seen numerous cases of supposed food allergy involving headache but had rarely encountered one that stood up in court. Close scrutiny almost invariably showed that the illness, while genuine, was not caused by food alone and, therefore, was not precisely an allergy to food. The scientist's interest in the present woman's case was stimulated by the possibility that here, at last, was a walking vat, stew pan or test tube: give her milk and she gets a sick headache; give her no milk and she remains well for years. If ever there was an example of sick headache due entirely to allergic antagonism between an adult human being and a foodstuff, this certainly seemed to be one.

The woman agreed to a scientific examination. On the appointed day she came to the laboratory, reclined on a comfortable table and allowed a tube to be put down her throat to her stomach. The other end of the tube, fitted with a funnel, was out of sight behind her head. As she awaited the worst, a glass of milk and a glass of water were placed at her side, in full view. She was relieved when someone said that the first test would be conducted with the water, to establish a basis for comparison.

The water was now removed from her sight, leaving the milk safely in place. Next, amid many solicitous murmurings, the experimenter secretly discarded the water and poured a previously concealed beaker of milk into the funnel, drenching the poor woman's stomach with the stuff.

The results could hardly have been more spectacular: nothing happened. Two and a half hours later the woman went home, feeling splendid. She returned the following week, still happy, having learned long before to avoid milk.

Again she reclined and swallowed the tube. This time the fiendish experimenter pretended to pour milk into the funnel, but substituted water. The woman became ghastly ill.

"That woman," says Stewart Wolf, "was as sensitive to milk as you can possibly get, but her sensitivity was to the word 'milk' or the idea 'milk.' Her allergy had nothing to do with her body's natural responses to the physical or chemical properties of milk.

The reason she got sick headaches after eating the pranksters' cake was probably that she could taste the milk in it. Or perhaps her friends were not as poker-faced as they thought. Milk disagreed with her only because she thought it should."

Hippocrates and other thoughtful ancients recognized the association between mental ease and digestive tranquility. But the specific effects of the brain on digestion remained moot until a few years ago. The inaccessible location of the digestive tract frustrated the inquisitive. There seemed no possibility of getting at the living stomach under normal conditions without spoiling the normal conditions. How could the stomach be scrutinized except by maiming and even destroying its proprietor? Examination of a stomach removed by surgery or after death gave useful information about lifeless tissue that had formerly performed as a stomach, but observation of that kind was only remotely helpful to anyone interested in the dynamic, workaday functions of the living organ. The schoolboy peering through his microscope at the leg of a defunct flea can write a competent paper about the dimensions and contours of the fragment but cannot tell much about its prior activity as a living leg.

The problem began to solve itself in 1822, when the right stomach and the right mind happened to be in the right place at the right time. The stomach belonged to a young Canadian roustabout named Alexis St. Martin. The mind was that of a U.S. Army surgeon, Col. William Beaumont. The place was the retail store operated by the American Fur Company at its trading post on the Island of Michilimacinac (now Mackinac), in the straits where Lake Michigan joins Lake Huron.

St. Martin worked for the company as a *voyageur,* a tough egg who conveyed trappers, their supplies and their booty back and forth between civilization and the wilderness. He was standing around the store between journeys one fine June morning when somebody accidentally fired a shotgun at him. The blast took him amidships and left him for dead on the floor. Colonel Beaumont

was called from the nearby U.S. Army post, did what he could, and predicted that the end was near.

Much to everyone's astonishment, Alexis did not die. In due course he was as good as new, except for a permanent hole in his abdomen, through which the studious physician was able to see into the stomach. An injury of this kind is known in medical pidgin as a gastric fistula (gastric being Greek for "stomach," and fistula being Latin for "tube"). Such wounds were not unheard of in 1822, but Beaumont was the first scientist to exploit the misfortune for the betterment of mankind. He spent years with the cranky St. Martin, gazing through the fistula, extracting gastric juice (known to television fans as "stomach acid") from it, dropping articles of food into it on the end of strings and later yanking out the strings to see how far digestion had proceeded.

Beaumont discovered more about the properties of gastric juice than you and I need to know. He also learned much about the motions of the stomach, the duration of its digestive activities, and the relative digestibility of various foods. En route, he observed what doctors and grandmothers had known from earliest antiquity but have lately begun to forget: the digestive equipment misbehaves in moments of fear, rage or similar mental disturbance.

The army doctor's resourceful techniques and substantial discoveries led, quite directly, to the experimental achievements of the great physiologists of the early twentieth century, Ivan Petrovich Pavlov,* of Russia, Walter Bradford Cannon, of Harvard, and Anton J. Carlson, of the University of Chicago. Pavlov got a Nobel Prize in 1904 for studies of the digestive process in which he employed his own ingenious variations of the Beaumont method. Cannon, a great teacher, was born in Prairie du Chien, Wisconsin, where Beaumont had done much of his work. Like

* Those who have heard of Pavlovian psychology often associate Pavlov only with brainwashed dogs that salivate at the sound of a bell and children who sweat at the sound of a word. One should not dismiss these momentous accomplishments as if they were the stunts of a stage hypnotist. Pavlov was a physiologist: he studied living things in action and sought to determine the mechanisms involved in the action. His main interest, inevitably, was the dominance of the nervous system in the behavior of the body.

Pavlov, he confirmed and elaborated Beaumont's observation that profound digestive changes often accompany emotional changes. Carlson, working for years with a fistulous patient known as "Mr. V.," enlarged the findings of Beaumont and Pavlov while contributing significantly to knowledge of gastric contractions and secretions.

The investigations of Pavlov, Cannon and Carlson undermined what had become (and unfortunately remains) the customary manner of treating, studying or even thinking about a stomach, or any other organ. The custom consists of pondering over the individual organ as if it existed in isolation from the rest of the body. There is a tendency to overlook the nervous connections that link the separate organs to the brain, and thence to the endless hazards and alarms of the outside world. This simplifies medical thought, of course, but complicates illness. It is a particularly ineffective way of dealing with a stomach.

Pavlov, Cannon and other competent thinkers having taken the trouble to establish this truth about the nature of human existence, a long lull set in. The stage was set for appropriately educated investigators to use modern scientific equipment in more complete studies of digestion, but the proper cast of characters had not yet assembled. Cannon's teachings, which he reiterated with great patience until his death in 1945, were honored more in the breach than in the observance. Psychiatrists, neurologists, doctors of internal medicine, physiologists and psychologists made sure to quote his wisdom in their learned texts. But few bothered to apply the methods of experimental science to the problems of diet and digestion. The wretched custom of considering a troubled organ as if it existed in isolation—like the leg of the flea under the schoolboy's microscope—persisted and prospered, and still does.

The situation improved early in World War II, when a spunky little man named Tom Little turned up at New York Hospital. He had been living with a magnificent gastric fistula for forty-seven years. Drs. Harold G. Wolff and Stewart Wolf were immersed in a

study of pain at the time, but the accessibility of Tom's stomach made an investigation of gastric function irresistible. The work with Tom at Cornell Medical Center and Oklahoma has solved many of the riddles of digestion by illuminating the importance of the brain in bodily health and illness. Like Alexis St. Martin, the late Tom Little occupies a permanent place in the history of medical science.

Tom was proud of his contribution to the advancement of knowledge, but St. Martin gave Dr. Beaumont a bad time. He was forever running back to Canada and would return only sulkily for further experimentation. When he died at St. Thomas, Quebec, in 1880 at the age of eighty-three his family carried on in his tradition. To foil physicians who wanted an autopsy, they let the body decompose so badly that it had to be left outside the church during the funeral service. They then had it buried eight feet deep.

People who have been conditioned by folklore to expect the worst of their stomachs frequently bear the extra handicap of not knowing what the stomach is or where it is located. They tend to diagnose as "stomach trouble" any unpleasantness that arises between breastbone and pelvis. The stomach is far less extensive than that. The following description of the internal terrain will not qualify the reader to perform abdominal surgery but, by abolishing fundamental confusions about the alimentary tract and its work, will pave the way for a sensible discussion of man's digestive disturbances.

The stomach is a shapeless, heavily-muscled bag, situated slightly left of center in the lower chest about nine inches below the throat, to which it is connected by the vertical pipe called the gullet, or esophagus. At its other end—rearward, rightward and downward—the stomach empties into the small intestine, where most digestion occurs.

The full purpose of the stomach is not yet known. There are numerous questions about what happens to food during its sojourn there. At one time, the bag was thought to be the sole organ of

digestion. Later, when scientists learned that we obtain most of our nourishment through the small intestine, some began to doubt the importance of the stomach. We all have read articles about human beings remaining alive for years after surgical removal of their entire stomachs. Such writings imply that the stomach is hardly more than a staging area for the intestines. However, now that more is being learned about gastric function, the anti-stomach theory is losing its vogue. And high time. Life without a stomach is neither pleasant nor protracted. Physicians find it almost impossible to maintain such a patient in a state of normal nutrition. The stomach may not be completely indispensable, in the exaggerated sense of its removal being instantly fatal—but it performs several unique nutritive and digestive functions and should be cherished.

Our passion for measuring everything is a powerful inconvenience to anyone trying to describe the stomach and its performance. Its size, topography and internal volume seldom remain fixed long enough to be measured. During digestion it pulsates hectically, looking somewhat like an outsized, overagitated kidney bean, measuring perhaps eight inches from top to bottom and four inches across. But it is so busy, presenting so many transitory bulges, indentations and curves, that linear statistics are irrelevant.

After it has transmitted the latest meal to the intestines, the stomach might be expected to remain inactive until the next session at table. But extended periods of relaxation are rare. The stomach springs into motion whenever appetite is present and the brain perceives food by sight or smell or merely conjures up thoughts of food. The stomach also becomes active when its proprietor is angry or resentful or anxious. Moreover, even when not stimulated in these ways, the stomach has its own automatic cycle of activity; every three or four hours, regardless of all else, it can be counted on to go to work. If no food is present at such times, the vague, rumbling discomforts called hunger pangs are noted and the brain begins scheming for nourishment.

Yet there are periods of rest. If the stomach is empty and no activating stimulus intervenes, or if the owner happens to be

nauseated, or overwhelmed with a sense of defeat, or just plain scared, the stomach goes slack. It hangs from the gullet as limply as a deflated balloon and may then measure as much as sixteen inches from top to bottom.

The stomach's capacity varies from person to person. It may hold from one to three quarts of food and drink, though the stomachs of some big eaters are said to be capable of accommodating as many as six quarts. The main point about capacity, however, is that the stomach *contracts* to process our food. It becomes quite small to deal with, say, a pint of food, and somewhat larger to dispose of a quart.

The walls of the stomach are thick and resilient, like tripe, and consist of several layers. The innermost is a soft, slick mucous membrane of many creases and folds, richly supplied with blood vessels and nerve fibers and also containing the glands that secrete gastric juice. This membrane is bonded by connective tissue to three sets of muscles which, in response to the commands of the nervous system, cause the stomach's characteristic milking, kneading motion. Outside the muscles is a protective sheath called peritoneum, which is like a tough cellophane.

When food enters the mouth it is lubricated with saliva and ground by the teeth into pieces small enough for comfortable passage. After it is swallowed it moves down the gullet. Gravity is of little importance in this descent, as the acrobatic can prove by eating while standing on their heads. The force that propels food down the gullet is provided by wavelike muscular contractions known as peristalsis. The phenomenon occurs throughout the digestive tract. It accounts for much of the motion of the stomach, it enables the contents of the circuitous intestines to travel uphill as well as down, and it churns the material into contact with the intestinal cells that carry nourishment away. Finally, peristalsis is important to the ceremony so raucously celebrated by laxative manufacturers.

The trip from the mouth down the gullet takes four to eight seconds. The food now enters the stomach through a portal that

opens and closes under the grip of a sphincter—a surrounding band of muscle. Before the meal's first mouthful has reached this portal, and even before the plate has arrived from the kitchen, the stomach has begun to writhe expectantly and secrete juice.

The most remarkable thing about the stomach is this juice, the most familiar constituent of which is hydrochloric acid powerful enough to etch steel or inflict second-degree burns on the skin of the forearm. When bathed in the corrosive fluid and kneaded by the stomach walls, the toughest meat soon loses its individuality and becomes part of the gray mush that goes to the intestines. Certain enzymes contained in the gastric juice help the chemical process.

The best-known enzyme is pepsin, which joins forces with hydrochloric acid to break down meat and other protein. The least-known and most interesting enzyme is gastricsin, which also works with hydrochloric acid against protein. The gastricsin story will excite anyone who appreciates the wisdom and economy of nature.

Gastricsin is a recent product of evolution. It has been found only in the stomach of man, whereas pepsin is standard among other mammals and also occurs in reptiles. Gastricsin differs from pepsin in two additional respects: it is a far more powerful digestive, and it requires gastric juice of less acidity. Just as man is beginning to lose his fifth toe (because he no longer needs it), and his body hair (because he no longer needs it), he apparently is starting to divest himself of the highly acid gastric juice that he used to need when he swallowed the bones along with the meat. And nature is supplying him with this new enzyme, which works more efficiently than pepsin in a less-acid gastric juice. Possibly there are human beings at large today whose stomachs secrete only gastricsin, just as there may be perfectly normal people who have only four toes on each foot. Since contemporary man is a transitional animal it is entirely conceivable that a few people may have completed the transition to gastricsin, thus qualifying as evolutionary blue bloods.

A third gastric enzyme is rennin, which works on milk and is so potent that it can curdle an amount 500,000 times its own weight. A fourth is lipase, which exerts a preliminary digestive effect on fats and is found mainly in infants.

Of all constituents of the gastric juice, none is more strategic than a material known as "intrinsic factor." Although it has never been isolated in pure form, its existence has been demonstrated repeatedly. Its chemical properties enable the body to extract vitamin B_{12} from natural sources such as liver and beefsteak. Once obtained, the vitamin travels to the liver and bone marrow, where it is essential to the manufacture of red blood cells. Without a stomach, or with a stomach in which certain secretory cells are damaged, the patient lacks "intrinsic factor" and vitamin B_{12}. His bone marrow therefore produces inferior red blood cells. The condition is known as pernicious anemia, a potentially fatal affliction that fortunately can be corrected by injections of B_{12}.

Because the stomach is fleshly protein, and gastric juice breaks down protein, the ability of the stomach to avoid digestion by its own secretions seems miraculous. It *is* miraculous, in a way, but can be explained. The explanation should be required reading for all who pamper their stomachs. The organ remains intact after a lifetime of exposure to hydrochloric acid and pepsin because of the marvelously resistant mucus that covers the stomach lining and fends off the acid and pepsin. This mucus is, of course, a handsome refutation of all theories about "irritating foods." Nothing we swallow at a meal is nearly as irritating as the acid that is present in our stomachs to begin with. The mucus provides as stout an armor against "irritating foods" as it does against gastric juice.

The stomach can also handle nuts, bolts, bones, ground glass, fruit pits and seeds, coins, twigs, stones, and all other foreign objects that are small enough to get in and out of it and not sharp enough to puncture it. The same is true of the rest of the digestive tract. The only foreign substance certain to foul up the works is

hair. Demented swallowers of hair develop hair balls, which resist digestion, do not pass to the intestines, block traffic, and have to be removed surgically.

Our ancestral superstitions about "digestibility" suffer another setback when one considers the length of time it takes various foods to pass through the stomach. Leafy vegetables, extolled in old wives' tales as the foods of virtue and longevity, defy the stomach's efforts because they are composed mainly of cellulose. Human beings cannot digest cellulose. Recognizable bits of spinach are found in the stomach twenty-four hours after everything else has been broken down and sent away. Because man has the digestive equipment of a carnivore, meat offers his stomach and intestines the least resistance. Not that leafy vegetables are harmful. They are, in fact, desirable. The intestines extract vitamins, minerals and water from them, and discard the cellulose. However, the very paradox that finds leafy vegetables "harder" to digest than meat, but altogether harmless to stomach and intestines, illustrates how deranged the cult of "indigestibility" really is. No food is indigestible unless taken in excessive amounts, as at Thanksgiving dinner, whereupon the indigestion is more sensibly ascribed to the stress of gluttony than to the harmful properties of food.

Except for bits of spinach, lettuce and the like, the average dinner seems to vacate the average stomach in four or five hours, although the time varies according to the temper of the diner and the composition of his meal. If the food is mostly protein, or the individual is keyed up, the stomach works rapidly. If the meal contains a lot of fat (which slows the stomach by triggering a hormone) or if the diner is in a state of despair, gastric digestion takes longer.

The first mouthful of any meal passes immediately through the stomach and into the small intestine, as if to prime the entire apparatus for the job ahead. Succeeding mouthfuls are churned around in the stomach and are tumbled, in no particular sequence, toward its exit valve, which is known as the pylorus (Greek for

"gatekeeper"). The pylorus squirts the gruel-like product of gastric digestion into the duodenum, the first segment of the small intestine. There, the mush is bathed in alkaline juices produced by the liver and pancreas. It then proceeds through the remaining twenty or twenty-five feet of small intestine, yielding its proteins, carbohydrates, minerals, vitamins and fats to the tube's millions of absorptive cells. By the time the material arrives at the colon for the final five or six feet of its journey, there is little nourishment left in it, except for certain salts and a great deal of moisture. The colon reclaims the salts and water for use by the body. It then passes the residue to the rectum for evacuation.

As we all know to our sorrow, trouble can arise at any point in the digestive tract. More often than not the trouble is trivial and occurs so infrequently that we do nothing about it except take some harmless (and generally useless) medicine, or perform some harmless, misbegotten maneuver with our diet. If the trouble is persistent, the doctrine of "It Must Have Been Something I Ate" can lead to real damage. The problem in recurrent digestive disturbance is almost never something that anybody ate, and the emphasis on dietary management is a detour away from successful treatment. The outcome can be fatal.

Death can also result from our tendency to blame the stomach for the derelictions of other organs. President Eisenhower nearly died of a coronary attack that had been misinterpreted as a stomach upset. A malfunctioning liver, pancreas, gall bladder or kidney may send out danger signals easily confused with stomach trouble. The pain may actually reside near the stomach, but only because it has been telegraphed there by the nerves. The same difficulty often occurs in cancer, appendicitis, hernia, polio, pneumonia, mumps, spinal tumors and tuberculosis of the bone.

The point of all this is that the individual who finds out what makes his digestive apparatus behave as it does will no longer waste his time or risk his life by treating unusual or persistent abdominal discomfort with poached eggs, saucers of pap and other rubbish that supposedly "gives the stomach a rest." He will

take himself to the kind of clinic or medical group or private doctor's office where modern medicine is practiced. In such an establishment he will be treated according to the wise prescription of Sir William Osler (1849-1919): "It is much more important to know what sort of a patient has a disease than what sort of a disease a patient has."

Chapter 2

What Is Your Style?

On an elegant Danish settee in the outer office of the president of the corporation sits Junior Executive "A," waiting his turn to be hauled over the coals. A carload of grommets has gone astray. He expects to be blamed, although the fault was not his. He is a nice-looking young man, with a college degree, a Madison Avenue haircut, a $95 suit, a house in the suburbs, a pretty wife, two young children, and a head chock-full of industrial technology.

His stomach feels as if there is a blowtorch in it. He is a heartburn man.

On an identical settee only a few feet away sits Junior Executive "B," also awaiting presidential wrath. Through no fault of his, a carload of mullions has gone astray. He expects to be blamed. He is a nice-looking young man, with a college degree, a Madison Avenue haircut, a $95 suit, a house in the suburbs, a pretty wife, two young children, and a head chock-full of industrial technology.

His stomach feels as if it has had five rides too many on the roller coaster. He is a nausea man.

Although both young men salute the same flag, attend the same church, support the same candidates and read the same newspaper,

and although they both aspire to the same country club, the same brand of automobile and the same executive suite, their styles are so different as to constitute opposite ways of life.

In certain crises, Junior Executive "A" reacts much as his early ancestor did when preparing to brain the saber-toothed tiger with a rock. His stomach becomes wildly active, as if in the presence of a meal. It turns fiery red, churns combatively and splashes acid up into his gullet, or down into his duodenum, or both. It is the stomach of heartburn and ulcer.

In identical crises Junior Executive "B" reacts much as his early ancestor did when, having heard the tiger's growl, he fled for his life. His is the stomach of nausea, the so-called nervous stomach, the stomach of the sinking feeling. It turns pale, hanging limp and quiet in abject surrender.

We should not oversimplify by deciding that the Heartburn Man is the hero and the Nausea Man the coward. Life, and individual ways of life, are enormously complex. Junior Executive "B" may perish at a frown from the boss but may be a Congressional Medal of Honor winner. Junior Executive "A" may become nauseated while lining up a twelve-foot putt.

Although these contrasting patterns of reaction to the same situation are matters of individual style, they are scarcely matters of conscious preference. Every sensible person would prefer to be entirely well-adjusted, to interpret his surroundings with complete accuracy and react to those surroundings with absolute equanimity and full efficiency in all circumstances. No such person exists.

The individual nervous system and other bodily equipment begin life with uncountable hereditary predispositions and susceptibilities: musical talent runs in families and so do big feet, red hair, obesity (see Chapter 10), fast muscular reflexes, nearsightedness, susceptibility to diseases of all sorts, and so on. Did Junior Executive "A" inherit his propensity for heartburn? Was the pattern of his reactions to real or symbolic threats built into

the fiber of his being before birth? Or was his body trained to behave that way by the experiences of infancy and youth?

Either or both may be true. Nobody knows, least of all Junior Executive "A." Unless he is a most remarkably sophisticated young man, his awareness of what is happening to him as he sits in the outer office is limited to the notion that he is about to be done an injustice. He does not know that his stomach is dancing a rigadoon. He probably blames his heartburn on something he ate. Moreover, as a dedicated organization man, he may not even be consciously resentful of the bawling out he expects to get. Yet his stomach is unquestionably behaving as stomachs do in moments of hostility and active resentment.

Much the same may be said of Junior Executive "B." His pattern of reacting with nausea to certain threatening situations may manifest itself even when he does not *consciously* perceive himself as overwhelmed and helpless. He may have been nauseated a moment or two before he earned the Congressional Medal. He probably was nauseated before his wedding. He may know he has a "nervous stomach," having had so many experiences with it, but he is equally likely to think it a "weak stomach" that reacts unfavorably to certain foods or germs.

If the lives of "A" and "B" become tenser and more complicated, as lives do, and if the men's patterns of reaction to life continue to be ignored or misunderstood or misdiagnosed or mistreated, considerable misery can be forecast. "A" might eventually sprout an ulcer that could wreck his career and even kill him. "B," whose nausea may accompany a tendency toward diarrhea, might develop ulcerative colitis, from which too many people die. He also may be more susceptible than some others are to cancer of the stomach.

Nevertheless, both young men can learn how to live with their ingrained patterns, and even can learn how to modify them. Toward that end, nothing is more important than an appreciation that the digestive tract is an outpost of the brain. The performance

of the digestive tract reflects certain of the primitive instincts and more than a few of the social values that are embodied in the electrochemical circuits of the brain. A "bad" stomach is the pawn of a beleaguered brain.

Some intellectuals think they know all this already. They have heard of psychosomatic illness (a confusing term with which we shall cope later), and they have sopped up large helpings of parlor wisdom about "the unconscious mind." They must try to park such baggage elsewhere if they hope to understand the relations between brain and stomach or, for that matter, brain and anything else.

The function of the brain is to interpret the environment and organize man's adaptations to changes in the environment. In this aspect it is crudely comparable to the wall thermostat that turns on the heat when the temperature goes down, and turns off the heat when the temperature reaches a comfortable level.

Most of the work of the human brain is essentially the same as the work performed by the rudimentary nervous systems with which less grandiose forms of life are equipped. Whether the creature under scrutiny be a man or a sea cucumber, the job of interpreting the environment and organizing bodily changes is carried on by nervous tissue, usually without the organism's awareness of what is happening.

The lack of awareness is easily understood insofar as it applies to sea cucumbers, which are not ordinarily credited with intellectual powers. But man likes to think of himself as having evolved beyond that sort of thing. He believes that he adapts to his environment not instinctively but thoughtfully. Indeed, his record proves that he uses his intellect to *change* his environment. He sometimes makes the environment adapt to him. He installs air conditioning. No sea cucumber can do that. (On the other hand, sea cucumbers discard their stomachs in moments of peril, growing new ones after the coast clears. No junior executive can do that.)

Nor can the sea cucumber compose symphonies or design cathedrals. Nevertheless, the brain that designs cathedrals devotes most of its energy to the split-second-by-split-second job of interpreting changes in the environment and organizing bodily adaptation to those changes. And most such business is conducted beyond or beneath awareness.

Here are a few of the innumerable unconscious, interpretive activities that scientists have observed and recorded in the brain:

When you dive into water, or bob for apples, your heart rate immediately slows, your blood circulation decreases, and the tissues of your body retard their metabolic processes of assimilation, growth and renewal. The brain, having interpreted the change in the environment, has taken every measure possible to insure conservation of oxygen, in case an emergency results from prolonged submersion.

If you and a trained athlete mount treadmills and work at maximum capacity, each of you will consume the same amount of oxygen, your bodies having made maximum adaptation to the unusual demands. But the trained athlete will get more work done on the same amount of oxygen: he maintains a lower pulse rate and far lower blood pressure. His heart circulates blood more efficiently than yours, nourishing his muscles more satisfactorily. This occurs because his brain, conditioned by repeated experience, is able to interpret the need for easier circulation, and governs his well-trained heart and circulatory apparatus accordingly.

The liver secretes an enzyme that is needed in the assimilation of carbohydrates. If you were to eat one huge meal a day instead of three moderate ones, the liver's store of this enzyme would increase greatly. The brain, having interpreted the changed regimen, would order the liver to produce sufficient enzyme to accommodate the heavier, once-a-day load of carbohyrdates.

One of the least-known of the brain's characteristics is its reaction not only to gross changes in the environment, but to events

that *symbolize* such changes. This is as true in animals as in human beings and may take place unconsciously as well as consciously.

In his magnificent *Mirage of Health* (World Perspective Series, Harper, New York, 1959) René Dubos has written that the sea urchin "responds to a sudden shadow falling upon its body by pointing its spines in the direction from which the shadow comes. This response is defensive, serving to protect the sea urchin from enemies that might have caused the shadow in approaching. The reaction is elicited by the shadow, but it refers to something symbolized by the shadow. . . . Similar symbolic reactions reach a complex development in higher animals. In man, indeed, practically all responses to things seen or heard are merely reactions to representative stimuli. Just as comparative studies in metabolism have revealed a remarkable unity in all the biochemical phenomena of life, so studies of behavior have brought out certain patterns which, formally at least, are common to all living beings."

In 1958, the late Dr. Konstantin M. Bykov, director of the Pavlovian Institute, Leningrad, told a meeting of the American Psychiatric Association in San Francisco how he and his colleagues stimulated increased secretions in the thyroid glands of hogs. At the ringing of a bell, a thyroid-stimulating hormone was given the animals. After a few repetitions of the experience the bell alone caused the glands to increase their secretions. The animals' brains had interpreted the symbolism of the bell and had sent the appropriate messages to the thyroid.

Dr. W. Horsley Gantt, director of the Pavlovian laboratory at Johns Hopkins School of Medicine, conditions the brains of dogs to produce the symptoms of heart trouble. At the sound of a bell, the dog gets an electric shock, to which it responds with increased circulation, rapid heartbeat, and heavy breathing. Later, *when the bell is unaccompanied by electric shock,* the dog displays the same symptoms. Its brain, having interpreted the sound as dangerous, organizes a bodily adaptation—heart symptoms.

The man who runs a race is assisted, as we have seen, by im-

proved blood circulation. His pulse and his blood pressure rise. If he is not merely competing in an athletic contest but is running for his life, his bowels and bladder may void, as if to cast off ballast. If he is driving seventy miles an hour in his car and suddenly hears the motorcycle policeman's siren, the same bodily adaptations will occur. He is not fleeing from the law or even planning to, if he is wise, yet his heart and circulatory apparatus behave as if he were fleeing and as if his muscles needed extra nourishment. And his bladder and bowels may disturb him during the ensuing interview. The man's brain has reacted to a threatening symbol and has prepared him for flight. The reason he has not fled is that higher parts of his brain, responsible for wisdom, have prevented flight.

The immortal Tom Little hated Stewart Wolf to put the drug neostigmine into his stomach. The drug activates the stomach and steps up its secretions. Under its influence acid sometimes spilled out of Tom's gastric fistula, burning the skin and causing discomfort. Wolf noticed that the same effect was produced by water—*when Tom thought the water was neostigmine.* Wolf then tried atropine, a powerful inhibitor of the stomach's muscular and secretory behavior. Tom did not know he was being given atropine. He thought it was the hated neostigmine. Accordingly, his stomach overcame the powerful inhibitory effects of the atropine and secreted profusely, as if under the influence of neostigmine. Tom had reacted to a symbol, not to a drug.

Another patient with a gastric fistula had been chief engineer on a tugboat, a career that disappointed and frustrated him because he thought his talents entitled him to a position of greater prestige. Whenever he was reminded of this his face would flush and so would his stomach lining, which would heave and swell and emit acid by the pint. His worst seizure occurred when a physician asked, "Where in the social hierarchy of merchant marine officers does the chief engineer of a tugboat stand?"

Dr. Franz Halberg reported to the Cold Spring Harbor Symposia on Quantitative Biology in 1960 that when mice were given

a certain poison at noon, eighty-five percent of them died, but when they were poisoned at midnight, only five percent of them died. You haven't heard anything yet. When the animals were kept under laboratory conditions that made actual noon seem like midnight, only five percent died of the poison. But when midnight seemed like noon, eighty-five percent died. The mice's resistance to the poison varied according to their interpretations of light and darkness.

In 1963, Drs. Jim H. Earls and Stewart Wolf reported the case of a woman who came down with hay fever on August 29 of every year and had been doing so for thirty-eight years. Each annual attack lasted for twenty-one days and then vanished without a trace. Furthermore, in the middle of each July, every year for twenty years, the woman suffered three or four days of diarrhea. And every March, for eleven years, she broke out in a violent rash. Repeated tests had failed to explain any of these ailments, much less their anniversary character. However, laborious inquiry revealed that the first attack of hay fever had occurred on the evening of August 29, 1924, a few hours after the woman's lover had announced that he was rejoining his wife and family. The annual diarrhea began shortly after a second male companion was killed in an automobile accident. The annual rash first appeared when the woman was grieving the death of yet a third male friend.

There is little doubt that each of this woman's curious illnesses began as a reaction to a painful situation and recurred when the original situation was symbolized for her by significant calendar dates.

All these examples demonstrate that the brain may interpret environmental change under circumstances that range from conscious awareness of the situation and its symbolism to entire lack of conscious awareness. Moreover, the individual, however conscious of the environmental change he may be, often is unaware of the adaptive measures that his brain has organized.

Dr. Stewart Wolf writes wittily of adaptive reactions that take place only in awareness:

> If someone should call you a "goat" in Spanish, your response would depend on whether or not earlier experiences with the language had established appropriate circuits in your brain; would depend, that is, on your familiarity with the language and the folk customs of Spain. The stimulus, the pattern of sound waves impinging on the eardrum and transmitted from the organ of Corti as electrical impulses, would be identical for two listeners, one who did and one who did not understand the language. The pattern reaction of the two would, however, likely be very different. The listener familiar with Spanish language and customs would have some sort of electrical circuit in his cortex with which the . . . impulses would connect. He would react to the implication that his wife had been unfaithful to him. Thus the stimulus, the word *cabrón,* lacking any intrinsic power to elicit a response in the hearer, might nevertheless evoke a violent reaction because of its meaning. The responses set in motion in such a situation may include not only an emotional reaction, but widespread [blood vessel] changes, possibly changes in the glandular activity of the stomach and elsewhere, in smooth muscle function and, of course, perhaps in skeletal muscle activity in the form of punching the speaker in the nose.

A shortcoming of the brain is that its powers of interpretation are less than infallible. Limited as these powers are by heredity, and muddled as they are by the haphazard imprint of experience, the brain sometimes perceives symbols of harm in perfectly harmless situations. Why else does the lady scream for help when the handsome stranger tips his hat and asks the way to the public library? Why else does Dr. Gantt's dog display cardiac symptoms at the sound of a bell?

Even when its interpretations are accurate (as, in fact, they usually are), the brain may organize bodily adaptations far beyond the needs of the new situation, or may organize adaptations far too inconsequential to ward off harm. When the brain over-regulates or under-regulates one or another bodily process, illness may result.

Every illness, in fact, is best understood when seen as an inappropriate adaptation to noxious forces in the environment.

The noxious forces may be the kind that we all have been taught to recognize as specific causes of disease: germs, poisons, extremes of climate, nutritional deprivation, physical injury.

Or the noxious forces may be mere words or events that have threatening significance to the individual.

In any case, the occurrence, severity and duration of an illness depend less on the hostile germ or disquieting event than on the adequacy of the individual's adaptation.

Quite obviously, some environmental forces are more noxious than others, and more difficult to adapt to. A smallpox epidemic slaughters young and old, hearty and feeble, well-adjusted and not. Unless your powers of adaptation have been enhanced by vaccination, it matters not how efficiently your nervous system, internal secretions and organs have been adapting to previous environmental change: attack by a virulent strain of smallpox virus is almost certain to kill you. So is a .45 caliber bullet fired into your heart.

Fortunately, few threats to health are as noxious as smallpox or bullets. To dwell too long on man's universal inability to withstand such unusual attacks is to overlook other facts that are far more pertinent to health.

For example, a visit by a hated rival can be as lethal as a bullet to a person suffering from heart disease. Why?

A feverish cold can put me to bed for a week, but neither my wife nor children will catch it. Why?

The antibiotics and sulfa drugs enable us to adapt to and recover from bacterial infections that used to disable and kill us. So we now fall ill of other diseases, especially the so-called "organic" diseases of the heart and digestive apparatus, against which wonder drugs are seldom useful. Why?

With the insight that was characteristic of his genius the late Harold Wolff pointed out that the form and duration of an illness

depend more on the nature of the patient than on the nature of the particular germ or other noxious agent. One man's meat is another man's poison because of the differences that exist among men and not because of the differences that exist among helpings of meat. In disease, no single factor is likely to be more important than the patient's previous experiences in life—the myriad imprints that life has made on the interpretive areas of his brain, usually without his awareness.

To this crucial concept Wolff added that the individual's adaptation to a germ or an event may cause more damage than could reasonably be expected from the germ or the event.

One does not usually think of one's brain as capable of wounding other parts of the body in this fashion, but Wolff's contention has been proved repeatedly. In 1956 he collaborated with Dr. Lawrence E. Hinkle to write:

> In order to facilitate the execution of . . . adaptive reactions, the brain is capable of enhancing, altering, diminishing, or even suspending, the functions of organs or cellular systems which might otherwise proceed automatically. The extent to which it is capable of influencing the entire internal economy is not generally appreciated, and it is probably for this reason, more than any other, that the effect of adaptive reactions upon human health is often underestimated. The brain has available to it as effector devices the "voluntary" nervous system, the "autonomic" nervous system, and the glands of internal secretion, and it appears to be capable of influencing any bodily process which is subject to the influence of any of these regulatory mechanisms. Furthermore, since the gross behavior of the organism is controlled by the central nervous system, all that may be affected by behavior, including total energy expenditure and the intake of foods, fluids and potentially toxic substances, is ultimately under its influence also. . . . The effects of these alterations in body function may . . . lead to the development of pathological processes which are irreversible and which may be permanently crippling or even fatal.

Hinkle and Wolff listed an enormous number of bodily functions which may be altered by the individual's interpretation of and

adaptation to difficult situations. Here is a partial summary of the effects on the body of words, events and situations:

Whether or not the individual consciously recognizes the situation as threatening, the rate, rhythm, electrical activity and blood output of his heart changes, and so does its tolerance of physical exertion. His blood pressure and the tone of his arteries and capillaries change. The viscosity, clotting time and sedimentation rate of his blood are affected.

His consumption of oxygen, his production of carbon dioxide, his urinary excretion of nitrogen and the amount of sugar in his blood change. His nose may clog up, and its mucous membrane, along with the body's other mucous membranes, may become red and swollen. His respiratory tract may react more sensitively than usual to pollen, humidity, temperature changes and other irritants. The rhythm of his breathing alters.

His entire digestive tract displays marked changes in motility, secretion and sensitivity, as we saw in Junior Executives "A" and "B." His kidney and bladder may become more active, or less. His skin temperature may rise, or fall, and he may break out in a rash, a sweat or both. His eyes may water.

The electrical activity in his brain alters. His mood, thoughts and behavior may be affected, also his reaction to pain and his ability to perform psychological tests.

None of this is harmful until the brain, trying to adapt the body to a situation, organizes too much or too little change in one or another system of the body. If the inappropriate change is maintained long enough, the result may be a serious illness and the harm will have been brought about by the adaptive process rather than by the direct effects of a bullet, a poison, a germ or some other invader.

The most obvious victim of the brain is the brain itself. One day the sufferer is unable to leave his apartment, or will not speak to his wife, or cannot remember his name, or finds his col-

leagues intolerable, or takes eight hours to do ten minutes' paper work, or jumps out of a window.

Some women react to their life situations by having miscarriages. Their brains organize the kind of bodily adaptation that kills an unborn child. Troubled marriages, or superstitions about the difficulties of childbirth and child care, are by no means factors in every miscarriage. But miscarriage, like other illness, is bodily adaptation.

By stimulating a certain area of the brain with mild electric current, neurophysiologists can accelerate the growth of ovarian, breast and testicular cancers in rats.

Hypertrophic pulmonary osteoarthropathy, the clubbed fingers and toes and the overgrown wrists and ankles associated with chronic lung disease, is arrested and reversed simply by severing the vagus nerve, which connects the brain to various internal organs, including the stomach as well as the lungs.

When an area of the brain is stimulated electrically, laboratory animals will eat long past the point of satiety. They will eat, in fact, until they drop.

In the metabolic ward of the Oklahoma Research Foundation every patient was on a strict, unvarying diet. Everything they ate and everything they eliminated from their systems was scrupulously measured and analyzed, in hope of discovering metabolic factors pertinent to their bodily difficulties. It was a well-run ward, where much emphasis was placed on impartiality, so that no patient might be thrown out of kilter by anger or despair. Dr. William Schottstaedt recalls that one day a person in authority decided "to ask each of the nurses which one of the doctors she felt was the ablest; which one she liked best; which one treated the patients best; and which of the other nurses she liked best, and which carried out her duties best. The nurses felt so threatened that one of them asked to have her vacation moved up and another asked to resign. While this was going on nothing was said to the patients. But the disturbance among the nurses was transmitted to the pa-

tients anyhow, and produced an extraordinary and relatively uniform disturbance in metabolic balance." Most of the patients began urinating sodium at a rate that could have been attributed to a large increase in salt intake, or to the administration of some drug. Yet the patients' salt intake had remained level and they had been given no drug. "The agent here," says Schottstaedt, "was the meaningful situation—the unmentioned trouble among the nurses."

I have asserted that the brain is even decisive in the body's reaction to infectious disease. The classic example is tuberculosis, "caused" by a germ. Yet, in the days when most people carried the germ in their bodies and were, in fact, infected with tuberculosis, comparatively few came down with symptoms of the illness. Why? After a lifetime of studying the tubercle bacillus, René Dubos says that the better he knows the germ the less he thinks it has to do with tuberculosis. He does not imply that it is possible to contract tuberculosis in the absence of the bacillus, but, as he points out in *Bacterial and Mycotic Infections of Man* (third edition, Lippincott, Philadelphia, 1958), individual adaptations to the stresses and strains of life increase susceptibility to infection. He writes, ". . . disturbances associated with any emotional upset influence the gaseous and metabolic exchange at the site of the lesion and thus secondarily affect the fate of the microorganisms . . . through an alteration in the local biochemical environment."

The problem of susceptibility to illness is illuminated in a paper written by Drs. Hinkle and Wolff in 1958. After studying the fluctuating health of three thousand people they concluded that "disease may wax and wane according to the moods and fortunes of the patient." This sort of thing is said all the time during parlor discussions of psychoanalysis, but it rarely has been substantiated as effectively as it was by Hinkle and Wolff. Their three thousand subjects were members of the following rather homogeneous groups:

A. 1,700 semiskilled American working women.

B. 1,527 skilled American working men.*

C. 100 Chinese graduate students and professional people.

D. 76 Hungarian refugees.

E. 132 recent graduates of American colleges.

In each of the groups, *one-fourth* of the individuals had suffered about *half* of all the illnesses. Furthermore, those who were more susceptible to illness were *susceptible to illness in general,* rather than to one or another type of illness. The investigators wrote: ". . . as the number of episodes of illness experienced by an individual increased, the number of his organ systems involved in disease increased also. Likewise, as the number of episodes he experienced increased, he exhibited illness of an increasing variety of etiologies [causes]. He was likely to have more 'major,' irreversible and life-endangering illnesses, as well as more 'minor,' reversible and transient illnesses."

That means more colds, more flu, more ulcer, more asthma, more cancer. During an Asian flu epidemic the persons most susceptible to illness were almost certain to be upended by the bug. Far fewer of the less susceptible persons got sick, although many were actually infected with the virus; tests of their blood revealed the presence of more than enough living virus to sicken other people.

The more susceptible individuals sometimes lived for months and years without symptoms and then would fall victim to successive diseases—sickness in clusters. The great majority of these clusters "occurred at times when they perceived their life situations to be unsatisfying, threatening, overdemanding, and productive of conflict, and they could make no satisfactory adaptation to those situations. The situations were, in general, those which arose out of disturbed relations with family members and important associates, threats to security and status, and restrictions and limitations which made it impossible to satisfy important needs and drives."

* Because the American working men and women were all employed by the same corporation—which has an elaborate health-maintenance program—their health records were available in great detail, covering periods as long as 25 years.

Let us grant that this explains why certain people are peculiarly prone to illness. But what about everyone else? Is every head cold a signal that the individual's life is "unsatisfying, threatening, overdemanding, and productive of conflict?" Do successful, well-adjusted people never get sick?

Since I pose these questions myself, I may be forgiven for offering a cranky answer: life *is* generally unsatisfying, threatening, overdemanding and productive of conflict. Nobody, not even the well-adjusted, is immune to life's shocks and hazards. Sooner or later everyone gets sick, even including those who approach the Greek ideal of "sound mind in sound body" and manage to achieve relative harmony with their environment. The onset and duration of illness—any illness—can be said to depend on the resolution of an elaborate algebraic equation compounded of the individual's heredity, his life experiences and the noxious agents to which he is exposed. Embodied in that equation, of course, is a certain amount of luck, good or bad.

In quest of a solution to any health problem—especially the dietary and digestive ones to which this book will shortly give detailed attention—the physician usually begins to make progress when he considers the patient's relations with his fellow man. As Harold Wolff once wrote, "Man is a tribal or group creature . . . dependent for his very existence on the aid, support and encouragement of other men. He lives his life so much in contact with men and in such concern about their expectations of him that perhaps the greatest threat of all is his doubt about his ability to live the life of a man. He is threatened by those very forces in society upon which he is dependent for nourishment and life."

Some might conclude from the reference to manhood that Wolff was implying a close and crucial relationship between the condition of the libido and the condition of the stomach. He was not. Neither was he suggesting that emotions cause illness. We must not rush to Junior Executive "A" and advise him that his trouble is emotional. We must not assure him that he is suffering from something he dreamed rather than from something he ate.

Here, indeed, is one of the central points of this book and one of the foundation stones of modern medical science: despite innumerable valiant attempts to argue that emotions cause illness, no respectable proof has ever been offered. Nobody has been able to demonstrate that an emotion is more than a reaction to a situation or event—just as illness itself is. Even if the emotion precedes the illness there are no grounds for the assumption that the emotion has engendered the illness.

If I see a baseball coming at my head I may raise my arm in self-defense. I may also break out in a cold sweat, may feel the emotion of fear and, in a moment or two, I may become nauseated. The nausea is not caused by the fear any more than it is caused by the cold sweat or by the rapidity with which I fling my arm about my head. The nausea, like the fear, is a response to the situation.

In truth, what happens in my brain and innards is the effect on my body of the rapid approach of a baseball. I—the whole of me—react in my own way to the incident. My emotion may help someone to understand my nausea, but he will be on the wrong track if he thinks the nausea is always preceded by fear, much less caused by it.

When I run happily into the dining room, the motion of my legs accompanies the happiness, but is not caused by it. The running and the happiness both are induced, along with a certain amount of salivation and gastric rumbling, by the smell of food and the sound of dishes being put on the table. Or if I remain in my darkened room, grieving a loss and declining to eat, my lack of appetite is not caused by the grief. Both it and the grief are part of my reaction to the loss.

Mr. Jones kisses his wife hello and says, "On my way home I walked through Brown's Lane and suddenly felt so nauseated that I thought I would collapse." His wife tells him to go to bed but he says he now feels perfectly all right and will have a nice martini before dinner. If his wife is inquisitive she might ask what happened to make him sick.

He might answer, "Nothing. I just got sick, that's all."

Or he might say, "I smelled something funny, I think, but I don't know what it was."

Or, "I smelled apple pie, but that shouldn't make me sick."

Or, "I smelled something that reminded me of my grandmother's house, but I can't figure out what that's got to do with anything."

Or, "The smell reminded me of the apple-pie smell in my grandmother's house, where my mother would send me whenever my father deserted her. The smell made me feel as miserable as I used to in those days, when I used to be afraid that I'd never be with my parents again."

Notice that Mr. Jones can be nauseated without the conscious recollection of childhood despair, without emotion, without even the conscious perception of apple-pie smell. The key to his nausea is that the human brain organizes its interpretations and adaptations from information fed into it from the environment—in this case, the smell of apple pie. Mr. Jones' computer is programmed to nausea under such a stimulus.

It must now be evident that emotion is merely one factor in Jones' personal algebraic equation. To treat his stomach trouble by restricting one's attention to his emotions would therefore be unscientific, as well as extraordinarily unpromising. For that matter, so would be the more conventional tactic of treating his stomach trouble by concentrating on his stomach. What needs to be attended to is the whole patient. To know him, one must learn something of his style, his patterned responses to situations, events, people, words. Underlying this style is the body he was born with, including the particular brain, nerves and other equipment he was born with. And a decisive influence on the stylized behavior of that body is the fundamental values that the individual has acquired during his time on earth: his goals, images, superstitions and prejudices, the standards whereby he measures himself and others and the world. These attitudes, if you like the word, are essential determinants of the individual's way of

life. They are not caused by his emotions, but they help to explain his emotions, just as they help to explain his other responses to life.

Stewart Wolf explains:

> Most people have a characteristic *Weltanschauung,* or way of looking at life; perhaps more precisely, a way of reacting when cornered or seriously threatened. The gambler takes a risk; the cautious person becomes more cautious; the fighter fights and the fleer flees. The classical studies of Harold Wolff showed that the patient with migraine meets challenging circumstances by doing things longer than, harder than and better than his neighbor. The alcoholic meets challenges by disengaging himself from responsibility. There are a multitude of such patterns. When they are highly developed within us, as was indecisiveness in Hamlet, and when they are indiscriminately used, they may contain the seeds of our ultimate destruction.

The alcoholic who no longer drinks has changed his style; he no longer disengages himself from responsibility, but copes with it in any of the dozens of ways favored by healthy people. The migraine sufferer who has been free of headaches for five years owes his recovery neither to miracle drugs nor miracle diets. He has changed his style. He has learned that it is impractical, and unhealthy, to seek approval for every act, or to see rebuff when people fail to applaud. He doesn't work as hard as he used to, but continues to work hard enough to satisfy the most exacting standards of normal men. His values have changed and, with them, his bodily reactions to certain situations that used to end with sick headaches.

If, as seems possible, the style of Junior Executive "A" is propelling him from heartburn toward a case of peptic ulcer, the time for him to come to grips with the situation is now, before actual tissue damage occurs. Curiously, part of his style, and part of his difficulty, is that he does not understand the heartburn and has all the wrong ideas about how to deal with it. When he learns what heartburn is, and what it represents as an adaptive

mechanism governed by his brain, his style may change—at least to the extent made possible by that elementary knowledge. Moreover, the change may be sufficient to arm him against the sort of situations in which the heartburn usually occurs.

On the other hand, he may have to find a physician who can help him to understand and change his style. The physician may be a psychiatrist, but not at all necessarily. The physician is at least as likely to be a general practitioner or internist who has kept abreast of recent discoveries about the behavior of the human body and is prepared to impart some of the new knowledge to the patient.

"The brain is most successful," says Stewart Wolf, "when it is able to govern the systems of the body in such a way as to maintain health in the face of an agent of disease."

And the abiding virtue of the brain is its ability to learn.

Chapter 3

It Must Have Been Something I Ate

The advanced industrial nations of Europe and North America feast upon the richest, most abundant and most varied diets in the history of the world. Malnutrition is unusual among our peoples and starvation is almost unimaginable. We have access to so much nourishment that our warehouses and waistlines bulge with it. We might be expected, therefore, to adopt a relaxed and triumphant attitude toward food, but we do not.

Having survived our ancient anxieties about the dangers of not eating, we now bedevil ourselves with anxieties about the dangers of eating. Our conscientious mothers recruit us into the Cult of Indigestibility while we lie helpless in the cradle. Like soothsayers scrutinizing the entrails of chickens, they study the contents of our diapers, finding dietary and digestive portents in every change of color or consistency. Long before we learn the shape of our planet or the name of our home town we are conditioned to believe, as an article of faith, that our vagrant digestive upsets are caused by something we ate. When at last we set forth to make our places in the world, we go equipped with a mental list of forbidden delicacies: "I like it but it doesn't like me."

Nonsense. For a normal human being, no food is harmful. The dietary deprivation with which we persecute ourselves in the name of "indigestibility," "allergy" or "intestinal irritability" is sheer folly. It may not be as urgent, immediate or explosive as some of our other madnesses but it is nevertheless a folly most profound, because it derives from man's ignorance of his own nature.

Stewart Wolf recommends an amusing rule of thumb to persons worried about eating unfamiliar foods. "If you are sure it is food," he says, "and are confident that it is free of poison or other contaminants, place a bit on the skin of your forearm. If it does not burn a hole there, it is safe to eat."

The experiments that he and Harold G. Wolff carried on in the accessible stomachs of Tom Little and other volunteers proved for all time that the stomach is indifferent to food. Mustard strong enough to blister the forearm had only the briefest, most negligible and painless effect when placed directly on the tissues of the stomach; the protective mucus of the stomach lining insulated the delicate tissue against the corrosive properties of the mustard, just as it fends off the hydrochloric acid of gastric juice.

Other foods and drugs often regarded as "irritating," "indigestible" or otherwise malevolent were found to be nothing of the kind. Among these were aspirin, digitalis, ipecac, quinine, frankfurters, cabbage, chili pepper, curry, pickles, vinegar, anchovy paste, kippered herring, rhubarb, 190-proof alcohol, and ether. The stomach tolerates all such assaults without difficulty. In the opinion of some experts, the small intestine and colon are less rugged than this. But the distinction is largely academic. Anything that can be placed in the stomach without harm will pass safely through the remainder of the alimentary canal. With rare exceptions, everybody's digestive tract is invulnerable to food.

Few people really believe it. The Chinese thinks the Occidental must have a cast-iron stomach to eat cheese, which disgusts him, and the Occidental thinks the Chinese must have a cast-iron stomach to eat live shrimp. Yet the human stomach is uniform throughout the world. Human beings happily consume whale

blubber, insects, wood ash, chalk, cats, rodents, dogs, weeds and thistles, peppers hot enough to blister the tongue, fermented liquids smelly beyond belief. Some people eat four or five meals a day, some eat only two or three. Some chew carefully, some bolt their food. It makes no difference. It is all a matter of habit, custom or adaptation. If we do not brainwash our children, they eat pickles, milk, lobster and ice cream at one sitting without ill effect. Within the limits of absurd excess there is no such thing as an indigestible combination of foods.

Because man's notions about "indigestibility" and the upset stomach vary with his culture, his symptoms also vary. If I belch at a Chicago table I not only make a faux pas but signify that I have eaten too much, or that the food was poor and I am in distress from it. But if I happen to be dining in regions of the Orient and neglect to belch, my silence is interpreted as dissatisfaction with my meal. Indeed, there are parts of the world where no higher compliment can be paid one's host than flatulence, loud and prolonged—the same flatulence that would bring many an American to his doctor with complaints about "gas."

Although infant food allergies exist and are fascinating, the theory that unfamiliar foods "disagree" with some infants is usually based more on uncritical guesses than on scientific proof. The phenomenon seems to resemble the experience that befalls adults during their first two or three days in a strange land: it takes a while for the body to adapt to a new diet. The period of adaptation may be marked by diarrhea due to the ingestion of alien bacteria or the consumption of more oil or grease than one has been accustomed to. But the body does adapt, by the processes of regulation reviewed in the previous chapter. No doubt the infant's reaction to a new food involves similar adaptive processes.

On the other hand, it is known that the gastric juice of newborn babies is designed for milk, containing more of the enzyme, rennin, than is present in later weeks and months. Thus, newborns do best on milk, and less well on other foods. Other chemical properties of the infant's digestive apparatus, as yet undiscovered, may in time account for certain troubles experienced by babies,

but present evidence suggests that a baby's reaction to food usually has less to do with the food itself than with the manner in which the food is offered. Above all, the mother who gives her baby a chance to adapt to a new food is likely to find that the process takes only a day or two. Such an approach is preferable to hysteria about baby's loose stool.

The supposition that strained apples "disagree" with baby because he got diarrhea after eating them, or vomited them down Mommy's neck, can be the first in a lifelong skein of suppositions that spoil the individual's relations with his food and his digestive tract. For example, anybody who is convinced that turnips disagree with him can be relied on to get indigestion every time he eats turnips. His upset is a conditioned reflex, like the salivation of one of Dr. Pavlov's celebrated dogs. The turnips "cause" the trouble in the same sense that the symbolic ringing of the bell elicits predictable behavior in the dog. There is no harm in the turnips, just symbolism that originated with an earlier upset associated with (but not caused by) turnips.

If a child gets sick after eating several pieces of peppermint candy, his mother decides that peppermint "disagrees" with him. His goldfish may have died. He may be on the outs with his gang. He may be disastrously behind in his homework. His family may have been nagging at him. His shin may hurt where he bumped it. Any of these difficulties might sabotage the performance of his stomach, but his mother does not know it. All she knows is that he ate peppermint candy and got sick. She does everything possible to prevent him from eating peppermint candy again. That is, she dins anti-peppermint propaganda into him. The interpretive areas of his brain react accordingly. The first time he sneaks a bit of peppermint candy, he gets sick. Twenty years later, the mere *sight* of peppermint candy may still arouse disquiet in his stomach.

Yet, if Junior Executive "B" should happen to read this chapter and become convinced that nothing about the chemistry of peppermint candy can possibly give him an upset stomach, he will have

begun to liberate himself from the conditioned reflex imprinted on his brain so many years earlier. Experimentation has demonstrated that it is virtually impossible to condition an intelligent adult if he knows what is going on and does not wish it to happen. Children, of course, can be more easily conditioned. But any human being who has been conditioned can undo the process, once the history of the conditioning is known and understood. It is as if useful knowledge trips certain jammed circuits in the brain, restoring their function.

Having just read this, Junior Executive "B" sets about extricating himself from his silly inability to eat peppermint. If life were simple, deliverance would be swift. But life is not simple. At the very moment of liberation, when Junior Executive "B" confidently pops a peppermint into his mouth, his boss may barge into his cubicle and ask, "How come you got nothing better to do than sit around all day eating candy?"

Because Junior Executive "B" is who he is, and has the style he has, an inquiry of that kind from an authoritative figure produces an elaborate effect. Among other aspects of that effect, the digestive apparatus of "B" suddenly becomes unreceptive to nourishment. In fact, he feels just a bit bilious. Naturally, he spits out the peppermint and, at the earliest opportunity, hurls this book into the wastebasket. He believes that the peppermint made him sick, not realizing that the boss made him sick. The effort to unglue his early conditioning has failed.

The pattern of his nausea is now clear to us, if not to him. He gets sick if he eats the foods that he was brainwashed into thinking were "bad" for him. And he gets sick if he finds himself in the kind of situation that makes his stomach droop. Moreover, if such a sickening situation arises at meal time, he is likely to add to his list of "bad" foods whatever he happens to be eating when the sickness occurs. Because his brain has not learned the truth about its relations with his digestive tract, it amasses all the wrong kinds of information.

Curiously, Mommy is not the only specialist in the dark art of

conditioning our brains against placid digestion. Physicians frequently have the same effect. When the doctor accounts for the woman's recurrent sick headaches by telling her to avoid milk, or when he explains your digestive upheaval in terms of the hot blueberry muffins you consumed, he propels her toward a milkless future and he conditions you against hot breads. For an adult to go through the remainder of his life without milk or hot breads is no tragedy; the tragedy occurs when the same physician applies the same unscientific criteria to the treatment of a serious digestive disease. Digestive ailments, as this book has already pointed out, and as it will repeat in various contexts until the notion becomes thoroughly familiar to all, can be successfully treated only when the entire patient is treated. To treat the stomach alone, without considering the performance of the brain, is ineffective.

The tendency to isolate the stomach from the rest of the human being and to treat it by means of dietary deprivation is as old as medicine itself but, unlike medicine, is on its last legs. In this connection it is interesting to recall the considerable period of history during which medicine treated illness by depriving the patient not only of his food but of his blood. The deprivers killed several kings of France and any number of commoners by bleeding them beyond the point of no return. Now that bleeding has been abandoned in most ills, practitioners of the healing science are beginning to learn that dietary deprivation is equally useless and sometimes no less dangerous—especially when it replaces the kind of total care on which the patient's survival depends.

The circumstances under which dietary deprivation makes sense can be summarized briefly, because they are few:

CONGESTIVE HEART FAILURE. In this disease the kidney reabsorbs too much sodium from the bodily fluids. Retention of the excess salt leads to retention of excess water—dropsy—which burdens the heart. If drugs do not relieve the condition, the patient must reduce his intake of salt.

MALIGNANT HYPERTENSION. A tendency to retain surplus salt

is also noticeable in this form of high blood pressure. The salt has an undesirable effect on the blood vessels of the sufferer. A low-salt diet helps.

HEREDITARY ENZYME DEFICIENCIES. In rare individuals the full quota of body chemicals fails to develop, because of a hereditary taint. When the missing chemical is one of the digestive or nutritional enzymes, special food intolerances pose grave, often insurmountable problems.

FEVER. When you are feverish your stomach becomes far less active than usual. It secretes little gastric juice and hangs limp. It is in no condition to accommodate normal meals. If you insist on feeding it too much, it will respond with nausea and vomiting, expelling salts and water that your body needs. This is why physicians ask you to take fruit juices and salty broth when you have a feverish sickness: the regimen permits the stomach to remain relatively inactive, and replaces the water you are losing through the dehydration of fever.

SPRUE. Sufferers from sprue cannot tolerate wheat products.

CELIAC DISEASE. A childhood variety of sprue.

GALL BLADDER TROUBLE. Persons with gallstones or other difficulties of the gall bladder and the bile ducts are properly advised to reduce the amount of fat in their diets. Fat burdens the already suffering gall bladder with work it should not be asked to handle—work it often repays with acute pain.

HIGH FAT DIETS. People who eat too much fat at one sitting are subject to the only form of indigestion that actually resembles the conventional version of indigestion, in that it is caused by food. The liver, pancreas and gall bladder may be unable to send pancreatic juice and bile to the small intestine at a rate fast enough to handle all the fat that arrives from the stomach. When this happens, traffic stops. While the partly-digested food stands still in the intestine, awaiting the bile bath to which it is entitled, the stomach goes slack, cooperating in the slowdown. The sufferer feels a powerful sense of fullness. Nausea and vomiting frequently follow. As to how much fat is too much, the answer depends

entirely on the individual. If you were to eat your next meal in an igloo, the large helpings of blubber would knock your digestion into a tailspin. After a few days you would probably adapt, however. In any case, the way to avoid the indigestion that sometimes results from eating unreasonably large amounts of fat is to eat less fat. An unpretty alternative was practiced at the feasts of Lucullus, whose guests would stick their fingers down their throats so as to disgorge the first twelve courses and make room for the next twelve.

ACNE. Some cases improve when dietary fats are restricted, some do not. Some improve when sugar or starch intake is reduced.

OBESITY. Many cases, but not all, can be corrected by diet.

DIABETES. Some diabetics must take insulin. Others can avoid medication by restricting themselves to a low-calorie diet that includes relatively little sugar and starch.

INBORN METABOLIC DISEASES. Some rare, tricky metabolic defects prevent the body from processing food properly and require that feeding be extremely fussy. An example is von Gierke's disease, in which the body is unable to store sugar and the patient must be fed at frequent intervals.

FOOD ALLERGY. Obviously, the way to relieve a food allergy is to eliminate the allergenic food. But first you have to identify the allergenic food. If the search is conducted according to scientific rules, the chances are excellent that the supposed food allergy will turn out to be something else, as in the case of the lady who was "allergic" to milk (see page 8). Stewart Wolf says, "Allergy to foods is something commonly complained of and rarely demonstrated."

In a sense, everybody is allergic to everything. It is all a matter of degree. If I eat a bushel of strawberries, I may break out in a rash similar to the one my uncle gets from eating a mere saucer of the fruit. By the same token, if enough ragweed pollen is blown into a room, each occupant will have hay fever symptoms, although the dyed-in-the-wool hay fever victim will show his

symptoms before the rest of us do.

The most common food allergies occur in children, involve milk and eggs, and are outgrown in later years. Some investigators believe that the allergic reaction includes localized swellings in the stomach lining, but there is no agreement on this. In any event, such swellings could hardly explain the other supposed symptoms of food allergy, which are thought by some to be nausea, vomiting and diarrhea. Wolf thinks that food allergies, when authentic, may affect the small intestine rather than the stomach, and that the nausea, vomiting and diarrhea might be brought about by processes that originate there. He adds, however, that *hives,* rather than intestinal or gastric symptoms, are the most frequent manifestation of food allergy.

The practice of giving "scratch tests"—sticking bits of food into the skin to test its sensitivity—is of dubious value in diagnosing a food allergy. First of all, the skin does not react to foreign substances as other parts of the body do. If it did, everybody with strawberry hives would also have strawberry asthma and strawberry diarrhea. Furthermore, it is well known that the skin may react to an allergen one day, but may not react at all the next day.

The tendency to attribute cases of recurrent headache to food allergies also has little scientific support. Wolf says, "No acceptable evidence has ever been offered that allergic sensitivity to foods causes headaches. To treat such a patient by requiring him to eliminate certain foods from his diet may have a suggestive effect on him, of course. So would surgery, sugar pills or other rituals and maneuvers that have no specific relevance to headache."

One of the most entertainingly brainwashed individuals I have ever met assured me solemnly that he was allergic to bread pudding. He had diagnosed his condition, he said, after a violent illness caused by a dish of the dessert.

"Are you allergic to bread?" I asked.

"Only when it's in pudding."

"Milk? Are you allergic to milk?"

"Yes. In bread pudding."

"Do you think maybe you had a case of food poisoning? Sometimes puddings collect staphylococcus bacteria. Absolute poison."

"Look. I'm allergic to bread pudding. Ever since I got sick from it I can't even stand to see the stuff."

There was no point in continuing the discussion at the time, but it can be pursued to advantage here. People who believe they are allergic to pot roast, but not to beef nor to the other separate ingredients of pot roast, are not allergic in the real sense of that word. They are, however, "allergic" to an idea. If, for one reason or another, they want to stop being "allergic" to pot roast, many can do so simply by recognizing—and believing—the scientific truth about relations between brain and stomach.

In coping with a spurious "allergy" the sufferer has an added advantage if he can remember the precise circumstance under which the dreaded article of food laid him low for the first time. Assuming that he has no reason to believe it was a case of food poisoning or intestinal virus, he can bet that it was what might as well be called "situational poisoning." If it happened within the reach of his memory he may be able to recall that it happened the day Uncle Marvin moved in and took over his bedroom, an experience sufficient to ruin anybody's digestion for a while.

Why should anyone bother to dredge up such memories? Is it important to eat pot roast when chicken and steak are so nourishing? Surely, nobody with the slightest sense of proportion would crusade to make people eat the foods that supposedly disagree with them. The point, however, is that an individual benefits greatly when he finally grasps the truth about digestion, becomes master of his own innards, and *proves* it by successfully violating some of the nonsensical dietary rules he has been observing.

From that day forward he can be impervious to misinformation about diet and digestion. If he should later bob up with an ulcer or a spastic colon, his knowledge that the affliction was not a result of diet will enhance his prospects of prompt, lasting recovery. He will avoid dietary treatment like the plague, seeking out the kind of modern medical practitioner who can help him

explore, understand and adjust his relations with his environment. Such doctors prescribe an occasional pill, and often walk around with stethoscopes hanging out of their pockets, like most other doctors, but they are likely to spend more than the usual amount of time talking with the patient. In fact, they behave much like teachers. This is entirely appropriate: the word "doctor" means, literally, "teacher."

Chapter 4

Nausea, Heartburn and the Whole Man

In demonstrating that health depends as much on the individual sense of values as on food, modern medical science subverts traditional beliefs about the nature of man. It is powerfully upsetting to hear that personal goals, social standards and miscellaneous suppositions about the world have so much to do with the way the brain governs the body that they can invite tissue damage, illness and death.

The flavor of this concept is offensively alien not because it is new but because it requires us to banish some of the magic from our lives. We are accustomed, after all, to regard ourselves as dual beings, partly physical and partly not. We have been taught to believe that the uniquely human part of us consists of mind, ideas, emotions and other intangibles, and that the other side is fleshly animal matter—the basely physical. By our traditional lights, the twain meet only under rare, quasi-miraculous circumstances, as when a man wills himself to recover from a deadly

illness, or another dies of grief, or a third rises to an emergency with superhuman strength and endurance.

Now comes the neurophysiologist to assure us that the twain are actually one. Having explored the brain, he shows that mental *is* physical, mind *is* matter. He makes us feel as Great-Grandpa did when the evolutionist announced that everybody was a descendant of monkeys. And how did Great-Grandpa's medieval ancestor react when informed that the world was round, not flat, and not the center of the universe? Both old gentlemen felt somehow demeaned by the findings of science. And both were outraged by the realization that certain aspects of their religious faiths had been invalidated. Yet they and their descendants and the fundamental tenets of their religions survived the news and, having adapted to reality, profited from it. So shall we, our faiths and our descendants survive the knowledge that mind is a physical attribute of the physical brain.

Still we do not easily cast off comfortable old concepts. Long after we have embraced newer, more trustworthy ideas, the old ones continue to influence us. The word "psychosomatic" is a good example. It reflects concepts of the past and has only the shakiest application to concepts of the present, yet it seems to be getting more popular than ever in non-medical circles and is heard frequently among physicians. It signifies different things to different people, of course, but none of its meanings gives reliable service. Leaders of modern medicine may say "psychosomatic" from habit, or for professional convenience, but many prefer not to say it at all. Here is why:

Making thoughts is a property of the brain, just as making urine is a property of the kidney. Now that neurophysiologists have demonstrated this, showing that thoughts and emotions depend on electrochemical events in the brain, the old philosophical distinctions between mind and matter, mind and brain, and mind and body have lost their validity. "Psychosomatic" expresses such outmoded distinctions and beliefs. Derived from the Greek words

for "soul" and "body," but using "psyche" to mean "mind" rather than "soul," the word refers to certain magical effects that the nonmaterial mind was formerly supposed to have on the body. Thus, terms like "psychosomatic illness" and "psychosomatic medicine" fly in the face of modern medical science by implying that some illnesses are physical, some are not, and some are a mystical, psychosomatic combination of both.*

Illness is an inadequate physical adaptation by the individual to a colony of germs, a situation, an event, or some other noxious influence of the environment. The body's interpretation of the environment takes place in the physical processes of the brain, which also governs bodily adaptation to environmental change. If the meaning of "psychosomatic" were stretched to include the real role played by the flesh-and-blood brain as mediator of the body's internal and external relations, one might then say that all illness is psychosomatic and that no illness is much more psychosomatic than any other. Even at its unlikely best, therefore, the word would be superfluous, adding nothing to medicine's definition of illness.

"Psychosomatic" is often used as a shorthand description for the occult concept "disease of emotional origin." This sort of usage, as we saw on pages 36 to 38, reflects confused thinking, for illnesses alleged to be of emotional origin appear *with and without* the emotions on which they are falsely blamed. A troublesome situation may give rise to an illness, an emotion, or both.

The belief embodied in the concept of "psychosomatic" that the human being is something other than an integral unit permits an occasional physician to declare that "there is nothing physically wrong" with his patient. Having subdivided health into the physical and the nonphysical, the individual who offers such a diagnosis may actually mean any of several things, none likely to be true: the patient's ailment is "imaginary," or the patient is "a malingerer and not sick," or " a hypochondriac" or just plain "crazy."

* "Psychology," "psychiatry" and "psychotherapy" remain acceptable words. Referring to the study or treatment of the mind (brain), they do not imply an unscientific differentiation between mind and matter.

Thus, at one extreme of medical thought "physical" illness is treated without due reference to the roles of the environment and the brain in the behavior of the body; at the other extreme the emotions are similarly treated. At neither extreme is the patient seen in his totality. At both extremes the "psychic" is artificially differentiated from the "somatic."

To escape from the misleading connotations of "psyche" and from confused distinctions between "mental" and "physical," neurophysiologists replace "psychosomatic" with terms like "corticovisceral" or "cephalovisceral," which describe organic adaptations mediated by the brain. Some physicians emphasize their interest in relations between the individual and his environment by calling their work "ecological medicine" or "medical ecology." Others practice the same kind of modern medicine, but call it "comprehensive medicine," because it addresses itself to the whole patient rather than concentrating exclusively on details such as emotions, stomachs or diets. The search for a fully descriptive adjective is unlikely to be successful, and need not bother anyone who understands that the physician's view of health and disease is more important than labels.

Our young friend, Junior Executive "B," brings his nervous stomach to a physician who practices "ecological-comprehensive" medicine. For some time, "B" has suspected that his condition is "of emotional origin," having heard a good deal of fancy talk about such phenomena. The last time he went to a physician he mentioned his suspicion. The physician agreed this was a possibility, but advised "B" to lay off rich foods and get plenty of rest. Also, the physician had comforting news for him: "There is nothing organically wrong with you. Just functional. Nothing to worry about."*

* Stewart Wolf has written: "All diseases are at once functional and organic in the sense that their expression is a disturbance in *function* of some *organ* of the body, with or without associated structural change or tissue damage." The distinction between "organic" and "functional" is meaningless, but one hears it all the time.

Nevertheless, "B" worries. His trouble may not be "organic," but his digestive organs cause distress at inconvenient times. Certain social and industrial situations are difficult enough without having one's stomach act up. So he makes an appointment at a suitable clinic or office, goes there and tells his tale.

The physician obtains as complete a history of "B" as he can, performs whatever tests and studies are necessary to establish that the patient's stomach is a normal, useful one, and then, having satisfied himself that he is dealing with a classic case of "situational nausea," sets to work not on "B's" stomach or diet or emotions, but on his style of life.

Recurrent nausea is, of course, a by-product of the individual approach to the perils and surprises of living. Nausea may follow the ingestion of an unusually fatty meal, as already noted, or can be brought about by dropping cold water into the ear, or feeding on poison, or acquiring a fever or an infection of the digestive tract, or it may occur in motion sickness. But such nausea is not likely to be recurrent unless the sufferer persists in taking poison, or needs to do a lot of traveling and can't stand it. The recurrent nausea that afflicts "B," and is most widespread, is the kind that arises in situations which the sufferer's brain, usually without his awareness, interprets as hopeless.

The first sign of attack is a sinking feeling in the pit of the stomach, accompanied by excess salivation. Or the feeling may be one of bloating and fullness. The sufferer gulps a lot of air, which returns in the form of belches. The fullness gives way to dizzying sensations of sickness. Pain and vomiting often follow, and diarrhea is not unusual.

All this comes about because the brain has ordered the stomach and the rest of the upper digestive tract to go on strike. Instead of functioning normally, the stomach goes slack and pale. Its lining flattens, secreting little or no gastric acid. The duodenum (the segment of small intestine that lies just beyond the stomach), may give pain by contracting strongly, as if to wall off such food as might pass accidentally from the under-functioning stomach. Peri-

stalsis slows in the remainder of the small intestine. In the colon, on the other hand, activity often increases, bringing on a diarrhea. The pattern of digestive behavior is identical to what occurs in poisoning, when the body undertakes a protective adaptation, rebelling against the ingestion of more poison and hastening the elimination of whatever poison may have reached the colon.

The chief emotion associated with nausea is dismay. The nausea, arising as it so often does prior to, or during, events of importance, mortifies the sufferer. It disrupts his activities, hampers his performance, makes him appear weak and susceptible. On the other hand, while his brain perceives the situation as overwhelming, and makes his digestive tract behave as if in terror, the individual may be entirely unaware that he is terrified. (The athlete who throws up before dashing onto the field or climbing through the ropes knows he is scared, of course, and so does the nauseated combat soldier; the rest of us are less likely to realize that our nausea is related to life's challenges.)

Without becoming well acquainted with the patient the physician cannot tell what kind of situation stimulates an abject response in the individual's digestive system. What makes me surrender may make you fight; what makes me hide may provoke you to attack; what finds me indifferent may send you into a tailspin of concern.

Stewart Wolf tells of a female patient whose case was mysterious until she became nauseated during a discussion of pregnancy. It was a remarkable nausea, because the lady was not pregnant at the time. Wolf called it "hyperemesis gravidarum praecox" (premature vomiting of pregnancy).

In another case, provocation of a reaction that included hostility enabled Wolf to help a woman whose gastric underactivity was accompanied by a stomach ulcer. The doctors feared that the ulcer might be cancerous, a suspicion enhanced by the stomach's failure to secrete acid even under the influence of powerful drugs. If the woman actually had cancer, her stomach would probably have to be removed.

"Yet there was something that made us feel otherwise," recalls Wolf. "She had lived an arid emotional life with frustrations by the dozen. She married an extremely unsatisfactory husband and was living the life of a sad-sack, as it were, until finally she got out of the marriage and met a man who was gentle, kindly, interested in her, and interesting. For the first time the sun came up over her life, and it was filled with new-found satisfactions. She was happy as could be.

"Everything went along perfectly until she happened to discover her lovely husband molesting her 12-year-old daughter by the first husband. Well, if he had robbed a bank or if he had killed his mother or if he had sold secrets to the Russians she could have gone on living happily with him, standing by him and deriving the satisfactions that this marriage afforded, but he had done the one thing that was beyond the pale. Shortly thereafter her husband was drafted, sent overseas, and the conflict remained unsettled. Before he returned, however, she finally decided that she would not take him back.

"The next time we saw this patient, we acted on our new knowledge of her. Instead of trying to provoke gastric secretions with drugs, we gave her another kind of stimulus—a meaningful situation. All I did was ask her, 'Tell me, Mrs. So-and-so, why was it that you would not take your husband back when he returned from overseas?' This powerful question produced a prompt secretion of gastric acid where the most powerful secretory drug available had failed."

The woman's stomach was not cancerous, or even precancerous. It could secrete copious acid. But her reaction to life had been such as to condemn the stomach to death. Under care less concerned with understanding her style of life, the stomach might have been cut out.

Except for the hole in his abdomen, Tom Little had a stomach like yours or mine. When it and he were seriously dejected, it turned pale and hung limp, and Tom complained of feeling "full," The "full" feeling was followed by the familiar "sinking" feeling,

then by nausea and vomiting. Like you or me, Tom did not follow anyone else's exact pattern. Without knowing him and his style extremely well, Stewart Wolf could not have predicted whether a given situation would produce underactivity in Tom's stomach, or overactivity, or no change whatever.

One morning Tom's stomach was exceptionally active, secreting gastric juice at a rate above normal. "Suddenly an irate staff doctor burst into the room, began throwing doors and drawers open, ransacking shelves and swearing to himself," reminisces Wolf. "He was looking for some records to which he attached great importance. Tom, who was paid a salary for tidying up the laboratory, had mislaid the records the previous day. He was afraid he'd lose the cherished job if his error were found out. He remained silent and motionless and his face became pallid. The mucous membrane of his stomach also blanched, and remained that way for five minutes until the doctor located what he was looking for and left the room. Then the stomach gradually resumed its former color."

If Wolf had not known already how much Tom feared to lose the job in the laboratory, this direct observation of Tom's stomach lining would have told him. On the other hand, few doctors are able to make experimental subjects of their stomach patients: they cannot look directly into the stomach, and they cannot really see what happens to the stomach in various difficult situations. They must rely on interview and discussion.

Unfortunately, the physician might say to a Tom Little, "How about your job? Are you scared of losing it?" To which a Tom would reply with characteristic spunkiness, "Of course not. If I ever left, the place would fall apart." Or a Junior Executive "B" might answer, with equal honesty, "My work is regarded well. I've had a couple of raises. I don't think anybody plans to fire me, and I can't imagine why anyone would want to."

In short, the physician's preconceptions of what "should" upset the consciousness of an average human being are likely to be inapplicable to a particular case. And the physician's head-on ques-

tions about the patient's outlook are likely to produce erroneous answers.

Drs. Lawrence E. Hinkle and Harold G. Wolff posed the problem intelligently in 1958, addressing the American College of Physicians on "Ecological Investigations of the Relationship Between Illness, Life Experiences and the Social Environment":

> . . . a man reacts to his life situation not necessarily as an outside observer evaluates this situation, but as he himself perceives it. The relevant variable with regard to man's reaction to his social environment and life experiences, therefore, is not the "actual" environment and the "actual" experiences themselves, but the subject's perceptions of these. The term "perceive," as here used, is taken to mean all of those processes that go on within an individual which involve the receiving and evaluation of information. Many of these processes take place quite outside of his awareness.

Stewart Wolf carries the thought further:

> The question of awareness versus unawareness, or "the conscious" versus "the unconscious," is not decisive in medical treatment. We know that the most important conflicts are often unconscious, having been blotted out of the consciousness by the amnesia that so often follows a shattering experience. These unconscious conflicts cause organic disturbances not because they are unconscious, but because they are important.

How in the world is a physician to discover what the repressed difficulties are?

By talking expertly with the patient.

In their book *The Human Colon* (Paul B. Hoeber, Inc., New York, 1951), Drs. William J. Grace, Stewart Wolf and Harold Wolff indicate the scope and purposes of such talk:

> The methods used . . . include viewing the life history of the individual in its cultural framework, exploring particularly the demands, standards and actions of the parents, siblings, spouses and superiors. Our data were obtained from the subject's own overt statements, from implications in his appearance, dress, manner of speaking, posture, re-

action in the company of others including the physician, authoritative figures, associates, competitors and subordinates, from dreams and associations and things said and left unsaid. From these sources and from statements by friends or members of the family the trained observer makes his assessment. Fluctuations in the course of the illness in question were then correlated with events, attitudes, emotions and the behavior of the subject.

The skills that the modern physician exercises in his conversations with the patient were reviewed for a conference of medical specialists by Stewart Wolf a few years ago. The following excerpts from the tape-recorded transcript of his extemporaneous talk will demonstrate for the reader that the up-to-date methods of modern medical practice are not merely technical but require enormous sensitivity to people, plus great knowledge of the world and its ways:

"The basis of any medical practice is communication. The art of communication is something we cultivate, build on, and develop throughout our whole lives in medicine. Oddly, it is not something that great emphasis is placed on in medical schools and it is not something that the patient in your office recognizes as a particularly valuable commodity. *He is likely to be more impressed with a gadget or by a recording of some sort.* But I think if you will review your own experiences as consultants you will all agree that on the occasions when the Lord has smiled and allowed you to make the diagnosis which the physician who asked you to see the patient hadn't already made, in a very, very high percentage of instances the right answer was suggested by something that turned up in talking with the patient.

"In treatment as well as in diagnosis, communication between patient and physician is of enormous importance. Many therapeutic situations depend almost entirely on such communication, not only as practiced by the psychiatrist, but by general practitioners and physicians in almost any kind of specialty. The privilege of the physician to help cure occasionally, and to relieve very commonly (but always to comfort), is therapy. The communication between

patient and physician, even in the hospital room of the patient dying of cancer or some other fatal illness, is an instance of the dependence of therapy on communication, of which talking is a very important element. The value of the interchange between patient and physician depends very heavily upon the qualities of the physician, as well as the capacities of the patient. It depends upon how freely the patient feels he can talk with the physician, how much he is willing and able to say.

"What are the requisite qualities of the physician? Well, I suppose we can all draw a vision of a perfect physician, but certainly one of the things that he would have to have would be a liking for and an interest in patients. He must also have a faith in their potential and a faith in his own mission. This is something that sounds very simple but I don't think that everyone comes by this kind of interest and commitment automatically.

"The physician must also have patience. Patience to worry along with a situation that is not progressing very rapidly. He has to have patience to face, not only the patient's failures, but his own. This is a very, very important aspect of communicating with the patient, I think, and it has to do very often with a willingness to accept hostility from the patient. If you have an individual with a terminal cancer, you are very unlikely to say, 'Well, I'm sorry. There is nothing I can do for you. There is no use for you to come back to see me, or there is no use for me to come back to see you.' No, you stick with that patient and however cantankerous he may be, you are gracious and attentive and seriously interested in the person until the end. If you are taking care of an individual with meningitis and you have on a new white coat or, worse yet, a brand new Sunday suit, and as you roll the patient over in bed he vomits all over your clothes, you don't turn to the patient and say, 'Well, that's a fine way to treat a man who has done so much for you, who has stayed up late at night, come to see you, worried about your situation, and who has put his very best into trying to help you.' Nevertheless the physician is often reluctant to tolerate other equally legitimate symptoms of illness, namely covert signs of hostility in

his patient such as being late for appointments, complaining about the physician's perspicacity, smiling at the physician and saying, 'You know, I'm not one least bit better despite the fact that I'm two hundred dollars poorer and have been coming to you for such and such a length of time.' We've all had experiences of this type, and how often we've been tempted to turn and say exactly what you wouldn't say to the patient that had vomited on you: 'This is a fine way to treat someone who is working so hard in your behalf.' And yet these symptoms of hostility worked out against the physician are, of course, just vicarious expressions of the patient's symptoms of hostility toward other, more important people in his life, on whom he dare not thrust these feelings. So this becomes a very important aspect of the physician, his patience and his willingness to stick with, and not reject, the patient. . . .

"Now, if we begin with this ideal physician that none of us achieves but all of us aspire to, much of the effectiveness of his interview, his communication with the patient, has to do with the laying of the groundwork to begin with, the setting of the scenery, and the first impression that the physician makes on the patient. Very often a patient's communication is curtailed because he feels that the physician is too busy, or he feels that the physician is preoccupied with troubles of his own, or he feels that the physician is not interested, or perhaps not sympathetic.

"We used to have a very interesting experience when I was at Cornell. We followed patients who had had nerve surgery for hypertension, and, for the convenience of the patient, we arranged for the visits at the same time that the neurosurgeons saw the patient. The patient would go to the neurosurgical clinic, and after he had been seen and duly recorded we would follow him from our angle. Time and time again, patients who were asked 'How do you feel?' would say, 'Well, doctor, I just can't do what I used to do. I feel terrible,' and then go on to a long list of familiar post-sympathectomy, and sometimes unrelated, symptoms. Recorded in the patients' chart, however, a few minutes earlier in neurosurgery clinic, would be the words 'Patient doing very well. No complaints.

Blood pressure so-and-so.' Knowing the neurosurgeon as a personal friend, and knowing him to be a man of great integrity, intellectually, and of great interest in his patients we often said to the patient, 'Why didn't you tell Dr. So-and-so what you're telling me? It says here on the chart that you had no complaints and I'm sure that was the situation.' The patient would answer, 'Well, Dr. So-and-so is such a lovely man and he has worked so hard and done so much that I just hate to disappoint him.' So there are many aspects, there are many wrinkles, there are many angles to the shrewd and accurate communication with the patient, by talking. I think many of us fool ourselves much more than we realize.

"I went to medical school at Hopkins and when we learned about the signs of peptic ulcer we had some very accommodating patients coming to the clinic who were delighted to say that yes, their pain was very localized, and that it came on two hours after meals and was relieved by taking food and soda, if that would help this young doctor out in any way. Glad to do it.

"But seriously, for setting the stage for talking with the patient, I think the whole thing can be summed up in getting across a crucial message. Now this message can't be put across in words, because the patient wouldn't believe them. If you are told extravagant claims you just automatically don't believe them. But the message must be put across by the manner and demeanor, attitude, and by the inner light from the physician. The message is: 'No matter what you say or do in my presence, there is no hazard of censure, ridicule, or betrayal.'

"Of course, we all feel that way in our relationships with patients, but I don't think we always get it across. When we do, then we create a situation which will allow for the best kind of communication, and this is as important as any aspect of examining the patient. Just as one can't listen adequately to the heart if the patient has a coat and shirt on or if the noise of buses going by on the street isn't muffled out, and so forth, so one can't communicate, talk to the patient effectively for diagnosis and treatment unless the groundwork is properly laid.

"Now the next point is the sources of information. What sources of information are available to the physician? A great many. First and most obvious, of course, are the direct words of the patient. What he says to you; but much more than that are implications in what he says. Unconscious revelations by context, slips of the tongue, contradictions, and things about the individual's behavior are very telling.

"I think this a pretty good argument for what the deans of all medical schools argue for anyway; and that is, a pretty general life experience and a pretty liberal education before a person comes into medical school. Let me give you an example.

"In New York, a young woman, a twenty-six-year-old Italian girl, was complaining of nausea and vomiting so troublesome and incapacitating that she couldn't work. As the story unfolded, it developed that this woman wasn't married. Now immediately, because of familiarity with the cultural patterns of first-generation Italians in New York, in contrast with some of the other displaced European cultures, you would immediately realize that this was incongruous, a girl of twenty-six, pretty but unmarried and not dedicated to any other line, such as a religious order. If she had been a fifth-generation Amercian who had gone to college at Wellesley this fact would have no importance at all. In the Italian culture in New York, however, it is customary to shield a girl most vigorously up until the time she is eighteen, and practically keep her from all contacts with men, and then as soon as she is eighteen to wonder why she isn't married yet. And most of these girls are likely to get married very early, well before the age of twenty-six. So, a knowledge of the social pressures and the cultural background, the modus vivendi, the way in which the people live, is enormously helpful to the physician in cutting through to the potentially important conflicts in their lives.

"In asking questions of the patient in the history, it's very important to avoid questions that are going to bring misinformation. I think all of us do that kind of thing often without realizing it. We'll say, for example, 'Did your father punish you very much when you

were a child?' The answer to that is 'No' automatically, because 'I'm not going to say anything disloyal about my father. I'm not ready to say anything like that.' It's an automatic reply. But if you asked an individual what sort of things he punished you for when you were a child, you are much more likely to get information. Everybody was punished for something, and the bases for parental punishment reflect parental values. They immediately set the stage for the kind of atmosphere your patient has grown up in.

"Let me give you an example of an experiment that was done a couple of years ago on a patient, a forty-two-year-old dentist who had a peptic ulcer and migraine headaches. He went to a very good internist who was very alert to the importance of life experiences in reference to peptic ulcer and migraine. The physician took his 'routine history,' did a physical examination, and after this was completed sat down with the patient and said, 'As you probably know, a good many physicians connect ulcers and migraine with emotional problems, so I think it would be well if we reviewed the situation together a little bit. Of course, you realize that anything you say is entirely confidential.' The patient said, 'Yes, I know that, doctor. I've given this thing considerable thought myself. I thought there might be some nervousness or emotional trouble but for the life of me I can't find a thing. I have a fine wife, two lovely children, an excellent practice and a house of my own. We have no in-law troubles and I should be the happiest man in the world.' The doctor said, 'Well, I'm not satisfied with this.' He was a careful man. He said, 'Well, tell me some of the details. Are there any disturbances at home? Do the children get on your nerves?' This line and others were pursued with negative results. Finally, the physician asked, 'What about the office? Is there anything at the office that isn't going just right? The landlord, your secretary, the place itself. Are you making as much in practice as you hoped you would?' The patient looked at him blandly and sincerely and openly and he said, 'Really, doctor, I'm doing better than I ever expected. I can't complain of my practice in any respect. It is as good as any dentist I know.'

"Now, this physician was approaching the problem in an earnest and systematic way, but he was getting nowhere, for several reasons. First of all, he put too much emphasis on the fact that 'now I've explored your medical difficulties and we're going to launch into a discussion of your personal life.' Anybody becomes defensive in this situation. It wouldn't be natural not to. In the second place, the questions were too leading. They implied possible points of conflict which might have worried the physician instead of trying to look at the problem through the eyes of the patient. Now you may say this physician didn't have much time and with more time more could have been gotten out. So, in this experiment great pains were taken to have another interview by another physician lasting the same length of time. It wasn't a question of how much mining was done, but where.

"The second interview went something like this. The doctor said, 'Are you doing with your life what you want to do?' The patient paused for a long while. 'I can't be definite about that, doctor. I believe I am. I think I'm content.' The doctor said, 'What kind of practice did you plan for yourself when you first started out?' The patient said, 'Well, that might be a source of discontent to myself. I have a fairly busy practice, but I don't think—well, perhaps the quality isn't there, and that might be a source of discontent in my own mind.' The doctor said, 'Do you mean it's too routine?' The patient said, 'Well, I think perhaps I'm seeing too many patients and can't be as selective in my work; the quality is perhaps not as good as I would like it to be. Now, I may be theorizing there.' The doctor simply said, 'Well, go ahead.'

"Instead of going from a conception in his own mind—he had a conception in his own mind—this doctor was using his knowledge that a very substantial percentage of dentists are frustrated physicians, and that many of them have applied for and were turned down by medical schools, and had underlying desires to be physicians. That's not true of all dentists, but it's true of a high enough proportion so that when a problem like this comes up, it's a good thing to have in the back of your mind as a possibility. But the

physician avoided taking off on an abstraction of his own and simply said, 'Go ahead.' The patient then said, 'Those are possibilities that loom in my mind. I have a busy practice, but perhaps it isn't a happy practice, though, in my mind.' And the doctor said, 'Suppose all stops were out, what would you like to be doing?' The patient said, 'Just what you're doing now. I've often thought I'd like to be affiliated with the university.' Now the doctor mistakenly guessed that he had been correct all along; he thought the dentist wanted to be a physician, but he didn't say anything. The dentist went on to clarify. He said, 'I enjoyed my internship and my residency immensely. I stayed on for about five years and I got a big bang out of that. I was happy there.' He told how he was graduated and where he had interned and so forth, and the doctor said, 'Did you think at the time of continuing in full-time work, teaching?' The patient said, 'Well, I opened an office not far from the hospital so I could retain my position at the institution.'

" 'Do you still do that?'

" 'No, I gave it up. I guess somehow or other I just got into a routine. We get ourselves married and we get into that swing, as it were."

"This man had been perfectly honest with the previous physician —had been perfectly honest up to this time—but now his manner was grim and dejected and it was evident that an important conflict had been discovered. The discussion moved logically to the question of the wife's financial demands and her social ambitions. Soon the story of being caught in a treadmill came out—trying to supply the demands of an avid, ambitious wife. The patient wept during much of this discussion. I think the point of the story is to attempt in questioning not to propose possible sources of conflict that might be sources of conflict to you but to induce the patient to be reflective and to turn up sources of his own."

Junior Executive "B," having been put at his ease by a physician whose manner is authoritative and sympathetic enough to inspire trust, finds it easy to speak freely and frankly. Wolf de-

clares, "I rarely encounter patients who won't discuss their real problems, even if they may not want to when treatment begins. At bottom, most people want to unburden themselves. They do so when they feel safe from ridicule, censure or betrayal."

Early in the game, the mechanisms of Junior Executive "B's" under-functioning stomach are thoroughly explained to him. After additional interviews—sometimes many, sometimes as few as one or two—he begins to recognize the connection between his nausea and the way he goes about meeting the problems of his life. After a while it is possible to discuss ways in which an altered style may improve the situation and relieve the nausea.

As I have pointed out previously, the physician is a teacher. He is no oracle. He issues no magical formulas, no miraculous ten steps to perfect digestion. But, as a teacher, he guides the patient to a more realistic, workable set of standards. Writing about psychiatric patients, Dr. Joseph Furst made a point in his book *The Neurotic: His Inner and Outer Worlds* (The Citadel Press, New York, 1954) that applies with equal validity to the treatment of digestive ailments:

> The problem is to develop and expand his *consciousness,* to enlarge his ideas and make sure that they are better formed and correspond more accurately to the objects or situations they reflect. The essence of this process is not that ideas and emotions are liberated from the unconscious where they supposedly existed all the time; rather we see a process of creation going on. New ideas, new motives and new emotions are actually created by his treatment experience. The old, ill-formed and sick ideas and emotions are not repressed; instead, they disappear and are replaced by newer and more correct ones. The process of treatment has not "ventilated the unconscious"; instead, it has destroyed incorrect or ill-formed evaluations of life and has replaced them. . . .

When Junior Executive "B" learns what kind of situations precipitate his nausea, and learns, also, that the nausea is nothing but a faulty adaptation to such situations, he will be much better forti-

fied against situations and nausea alike. When perturbed, he will tell himself that, regardless of his past patterns, the occasion does not warrant such fear, much less such illness.

For many people, the ability to analyze and understand their digestive responses to life is sufficient to minimize—and often eliminate—difficulties. If "B" is unable to bring this off, he can at least allow for his vulnerability when making his business and social arrangements. For example, he won't eat lunch on the day of the big conference, knowing that plain queasiness is better than losing one's lunch. By preparing for a possible bout with his nausea, "B" trains himself to make the vulnerability pay for itself. With practice, he learns to anticipate his recurrent problem and either ward it off or compensate for it. If his case is extremely difficult, he may decide to quit his job in favor of more congenial, less threatening employment, where the satisfactions will outweigh the slings and arrows. The solution for him depends, just as the detailed diagnosis did, on his nature.

Drugs are entirely useless to a person who responds to certain challenges with an underfunctioning stomach. The great Ivan Pavlov used to prescribe pepsin for such cases, and certain physicians still do, not realizing that the digestive enzyme has no effect unless the stomach secretes gastric juice of a certain acidity. If the stomach secretes such juice, it is functioning properly to begin with, and has ample pepsin. Thus, pepsin is of no help to the balky, nauseated stomach.

Pursuing a similar line of thought, some physicians give patients doses of hydrochloric acid in vain efforts to compensate for the stomach's failure to secrete. The problem, however, is not to get a "dose" of the acid into the patient, but to persuade the patient's stomach to secrete acid normally, which is to say repeatedly and frequently. Thus, all the doses do is dissolve a certain amount of dental enamel and burn any number of gullets. It is completely unsafe for anyone to swallow the amounts of hydrochloric acid required to help an underfunctioning stomach.

Some patients with recurrent nausea take barbiturates. If con-

sumed in prescribed amounts, the pills have no effect on the digestive tract. If taken in larger amounts, they stupefy the patient and become a serious addiction. Nor are tranquilizers any better: they have a negligible effect on the digestive apparatus. The patient's mood may become less dejected because of the action of the drug, but his innards continue to behave much as if he had not taken the drug at all.

A reasonably safe chemical that restores an intermittently underactive stomach to a state of normal activity is alcohol, a stimulator of the stomach and a pacifier of the brain. The well-known side effects of this boon to mankind limit its medical use, although a sufferer from nervous stomach can sometimes get through a difficult business lunch with flying colors if the ground rules permit a couple of cocktails before the fray.

All this being so, the best cure for nausea remains conversation with a knowing physician. The New York girl to whom Stewart Wolf refers on page 65 began improving within a few days of their first interview. As he said in his speech, he suspected from the beginning that her difficulty originated in the clash between her American outlook and the old-country traditions of her family. Wolf asked her about this and she made a deprecatory gesture, saying, "I love my job and we have a happy home."

Instead of retreating from the subject or insisting on an argument, the physician looked grave and puzzled, "trying to get across the message, 'Is this really so? From my experience in medicine it really should have been the other way.' "

After a pause, the girl broke into tears and said she had never thought of things this way before, but it *was* difficult to satisfy her father and family about her unwed state. Yes, the boys who appealed to her more traditional sisters held no appeal for her. This made matters worse: she not only was unwed but was notorious for declining proposals. Her nausea and vomiting were worst on weekends, when she was home and vulnerable.

The girl's underfunctioning stomach was cured as soon as she changed her situation. She moved to an apartment of her own,

continued to enjoy her job, and filled her leisure hours with volunteer work among people who liked her because she was nice, and saw nothing reprehensible about spinsterhood at age twenty-six. Things went swimmingly for years, until her employer began making fervent passes at her. He wanted to establish her in an apartment. At this point, the nausea and vomiting returned, prompted, no doubt, by conflicts that were mirror images of the ones that had sickened her when she lived at home. She was not the mistress type but the wife type, and her hopelessness—conscious and otherwise—at being invited to become a mistress when she wanted something else can easily be imagined. She returned to Wolf, who gave her moral support, had long talks with her and was pleased to learn, shortly thereafter, that she had quit her job and, with it, her nausea.

A physician once was called on to treat the wife of the president of a large Eastern university. Let the physician tell the story: "She had been a much sought-after girl, and then she married this high-powered but remarkably undemonstrative man. As his wife, First Lady on the Campus, she was under constant pressure to be vital, perceptive and gracious, but she never could tell from her husband's actions whether she was doing a good job. She used to wake up at night with terrible nausea, palpitations, bloated feelings and the like.

"I happened to know that her husband was mad about her. All I had to do was point out to her that she was making the hopeless error of waiting for a reaction from him that would be based on her life style rather than his. During our two conversations she verified for herself that her husband had actually been acknowledging her great success as a wife, but had been doing it in his coin, not hers. She has had no digestive problems since. Her outlook is revised and her needs are appeased."

The emotions of some patients are vividly relevant to their indigestion, being provoked by the same conditioned reflexes and situational difficulties that bring on the indigestion. A man full of

such emotions trekked halfway across the United States in quest of relief for digestive difficulties that had been making him wretched for decades. By guiding his attention to the emotions and to the style of life they represented, his physician was able to re-educate the man in a fantastically short time.

The trouble had been diagnosed elsewhere as "abdominal migraine," which was like saying that the poor fellow had a headache in his stomach. In a way, he did. His symptoms were recurrent nausea, pain, inability to eat, belching, a sense of insufferable fullness. Before seeing him, the new physician interviewed the patient's wife and learned that the symptoms had arisen more than twenty years earlier, when the man had suffered a calamitous setback in his career as a lawyer. It seems he had been doing quite well in his practice but had decided to go for broke, concentrating most of his energies on a big damage suit which, if successful, would have bolstered his reputation and his bankroll in one swoop. Naturally, he lost the case. He was racked by remorse and self-reproach for weeks. He then took an overseas job with the government, easy duty that galled him because he felt he was not using his talents sufficiently. During this stint, he sprouted a second set of symptoms: when not suffering from an underactive stomach he began suffering from an overactive one. Between spells of his nausea, he was troubled with heartburn and other varieties of pain that, like the acid-induced pain of ulcer, were relieved by doses of baking soda.

A surgeon lumped all the symptoms together, branded them peptic ulcer, and operated. He widened the pyloric valve, which discharges food from stomach to duodenum, and severed the vagus nerve, which prompts the stomach's muscular activity and secretions.

After the operation the lawyer no longer had the heartburn-ulcer type of pain, but his nausea was worse than ever.

The man was now employed in another government position, a demanding one, but was no happier with it than he had been in the easy job. He was a mess, and knew it. According to the wife,

the man's mother had been very difficult, an hysterical type whose style it was to have "attacks" of breathlessness when crossed. The patient had been a rebellious child, but a devoted one. When his misdemeanors left Mother gasping for air he would be overcome, invariably, with a sense of guilt and worthlessness. These feelings became part of the man's conditioning. They became ingrained in his assessment of himself: whatever he did as an adult had to be wrong, somehow, and every new situation of any importance was a trap baited with promise but sprung with hopelessness and failure.

Having collected this much background information, the physician went to the bedside. It developed that the man had made his long journey for more reasons than one. Knowing that the physician was an authority on migraine, he had looked forward to causing a certain amount of expert bewilderment with his "abdominal migraine." At the same time, he presumed that bewilderment would not delay cure, which would preferably be accomplished in no time flat.

The lawyer's eagerness to be accepted as a medical curiosity gave the physician a quick opening. Acknowledging enormous interest in the symptoms (which were actually quite commonplace), the physician allowed that quick miracles were probably beyond expectation and the best course might be to dig as deeply as possible into the origins of the illness. The lawyer was delighted to cooperate.

After explaining the mechanisms of nausea, and pointing out that the symptoms are sometimes accompanied by conscious feelings of hopelessness, the physician drew the patient's attention to the emotions he had felt after losing his big damage suit, after making his mother suffer an "attack," and after finding himself in one or another unsatisfying job. The lawyer, anointed now as a full-fledged member of the medical team, had no difficulty whatever in agreeing that his chief emotions all these years had been, precisely, hopelessness and guilt.

He agreed that he usually felt trapped, had a propensity for

making the losing choice, had never really allowed himself to enjoy being in a good situation. He imposed such demands on himself, his employers and colleagues that he made disappointment and failure an absolute certainty. He saw it all quite clearly.

The patient felt much better after this discussion. It was his first and last with the physician. A few days later he left the hospital determined to take the pressure off himself, determined to share his thoughts and problems with his strikingly perceptive wife and, above all, determined to make his digestive attacks pay for themselves by resorting to introspection about their meaning and their needlessness.

Several months later, the physician got a cheerful letter from the lawyer, reporting that he had remained entirely free of his old symptoms. The case illustrates as well as any that individuals conditioned in youth to live in self-defeating ways can often be helped to change, and quickly. It depends, as all must agree, on the individual. It also depends on his doctor.

The brain of the Nausea Man interprets certain events as threatening and reacts as if the situation were hopeless. The brain of the Heartburn Man finds similar events equally threatening, but reacts more militantly. If civilization did not impose social strictures on the Heartburn Man, he might kill his antagonists and eat them raw. Instead, he contains anxiety, anger and frustration so effectively that he often is not even aware of them. The only thing that gets eaten raw is his poor gullet. In moments of situational pressure, his stomach becomes overactive, splashing acid gastric juice all over the place, especially into his gullet, where it burns.

Persons who suffer the familiar pain just beneath the wishbone often feel it an hour or two after meals, and call it indigestion. In fact, it is more like overdigestion. The stomach, stimulated by food, and overstimulated by the individual's interpretation of and attempted adaptation to one or another of life's affronts, digests the meal with great rapidity and commotion. Or the stomach gets

overactive between meals, under similar stimulation from the brain.

Many of us, of course, are part Nausea Man and part Heartburn Man. If we are such types and express fear or bitterness with digestive symptoms, we occasionally suffer nausea and occasionally go to the other extreme. Tom Little was like that. Neither nausea nor heartburn were persistent problems for him, but he was susceptible to both, getting an underactive stomach in moments of great despair, and an overactive one when angry and frustrated.

After Tom's stepdaughter died her four children were put in an orphanage, where they were unhappy. He wanted to take them into his own home, but was told not to by someone on whom he had been depending for part of his livelihood. This interference in his personal affairs annoyed Tom no end. He persisted in his determination to rescue the children. His benefactor reacted by threatening to withhold future support. During the two weeks it took to resolve the conflict, Tom's anxiety about the threatened loss of income combined with his ire at the high-handedness of the threat to keep his stomach in a state of constant excitement. It was engorged, red and overactive. He began to notice pain in the pit of the stomach, relieved by milk, food or baking soda, as if he had an ulcer. But he had no ulcer. When a new source of revenue became available, and Tom no longer had to worry about his benefactor's threat, his stomach subsided and his pain vanished. It is entirely conceivable that Tom might have come up with an ulcer, if the conflict had continued much longer.

It is essential that the reader learn to distinguish between occasional heartburn, which can afflict anyone, and persistent, recurrent abdominal pain, which may be serious. Occasional heartburn vanishes after a mouthful of baking soda and water, or a couple of sips of milk. The homely remedies neutralize and flush away whatever acid has splashed into the gullet. Milk has the added effect of supplying fat to pacify the briefly overactive stomach. The attack ends quickly and, if it does not recur persistently, it should be forgotten. It should not, of course, be blamed on

food. Anyone who can get heartburn by eating certain foods is treating himself like one of Pavlov's dogs. He gets the heartburn because he has been conditioned to it. At some point in his life he ate the food under unpleasant circumstances and blamed his resultant discomfort on the food instead of the circumstances. He can usually put a stop to the nonsense merely by realizing that food does not cause heartburn but personal reactions to circumstance do. If this does not work, and if his meals are adequately varied and enjoyable without the difficult item of food, he might as well eliminate it from his diet. But if, as so often happens, he has had to restrict and contort his diet to avoid heartburn "caused" by an ever-increasing number of foods, he might as well seek decent medical attention, rid himself of his erroneous beliefs and rejoin the ranks of happy diners.

Whether or not the sufferer thinks he knows which foods "cause" the difficulty, he should hasten to a physician if his discomfort is at all frequent. The heartburn may turn out to be gall bladder trouble or any of the numerous other ailments reviewed on page 19. Even if it is only heartburn, the persistent overactivity of the stomach is itself a danger signal, a warning of real or incipient peptic ulcer. It is here that the manufacturers of alkalizers render their greatest disservice. Gullible television fans who swallow antacid preparations usually achieve temporary relief from pain, but their overactive stomachs remain overactive. They need medical care.

Rather than pursue the overactive stomach in terms of heartburn, I shall deal with it in the forthcoming chapters about peptic ulcer, a serious disease. To set the stage, here is the horror story of a forty-year-old man who had a persistently overactive stomach and alternated between neglecting it and abusing it.

Except for his heartburn, which he ignored, he seemed healthy enough until Thanksgiving 1960, when he began having bloody stools. He was taken from his small town to a hospital in the city. The tests were negative. They sent him home.

His abdominal pains resumed, becoming more widespread. He

began bleeding again. A month after his first hospitalization he was brought back to the same institution for emergency treatment of a perforated duodenal ulcer. The surgery was standard, consisting of repairs on the ulcerous wound in the intestine.

Six months later, more bleeding. Again to the hospital, again negative findings, again return home, again resumption of pain.

The patient now went to his home-town physician, who happens to be a first-rate man, and announced that he had been reading up on the subject and had decided to have part of his stomach cut out. The physician answered, "That is not wise. You haven't been sick long enough for anything so drastic."

So he went back to the city, found another practitioner and said he wanted his stomach out. "You do?" said the physician, happy to oblige, "When? This week? Next week? Week after?"

The operation took place. The man felt tolerably well for about a month, and then began suffering from bloated sensations, nausea, gastric distention, pain. His digestion, of course, had been fouled up by the unnecessary removal of half his stomach.

Back to the city to yet another physician, who told him he needed additional surgery to enlarge the pyloric outlet from stomach to duodenum. No sooner said than done. But the new surgery was no help. The man was still oppressed by bloating, nausea and other symptoms.

It got so he was afraid to eat, because of the discomfort he associated with food.

After still another stay in the hospital, this time for more tests (negative), he returned to his home-town doctor, who sent him to a consultant in another part of the state.

Obviously, the consultant found the man's style remarkably impulsive and thoughtless. It was combined, moreover, with a resentful outlook on life. In this patient's sour view, the things that kept happening to him were never his fault. He had been married in his teens, and divorced six months later. "Why?" asked the physician.

"Why should I live with her? We didn't get along."

So he cut her out, as he later cut his stomach out.

He was still annoyed at the former wife. He also was annoyed at having been unable to go to college: he had a daughter to feed. And he was sore that he had not stayed in the Navy, because his brother had done so and would retire before the age of forty-five. Above all, he didn't like the foreman in his plant.

He acknowledged that his abdominal pains often occurred after a run-in with the foreman. He also acknowledged that he was chronically tense, and never shared his troubles with anyone, not even his second wife: "I've got my own worries and don't bother anybody with them. And they don't bother me with theirs."

The consultant decided that there was little to do for this patient except be his friend. The man was too shallow to develop much insight into his real problem, a uniformly false and unproductive sense of values. But the man responded to medical friendship as most patients do, with gratitude and trust. He confided in the physician more frankly than he had ever confided in anyone, no doubt because this was the first time in his life that anyone authoritative had ever granted him so much time and attention. In the neutral, protected atmosphere of the hospital, his symptoms diminished. He agreed with the consultant that he should try to be a more expressive person. He would talk more to his wife than he had in the past.

The man went back to his small town. His physician there reports to the consultant that he is doing better. He has the discomforts to which surgical mutilation left him susceptible, but he understands, at last, that the discomforts are of no great importance. He understands that he should not seek more surgery but had better see what he can do about being less impulsive, more philosophical, less bottled up, more responsive to others.

He learned something about overactive stomachs, but he lost half of his own in the process.

Chapter 5

Peptic Ulcer, Woundstripe of Civilization

Once upon a recent time there was a multimillionaire who insisted on visiting at least two countries a week to superintend the prosperity of his various holdings. He traveled in his own plane with two or three secretaries, to whom he dictated reams of letters and memoranda illuminating for his international army of subordinates the thousands of subtleties that he did not have time to emphasize in person or by telephone. He telephoned, of course, at every opportunity, from hotel beds, bars, dining rooms, pools and bathrooms, and from cars, trains and planes. He was a dynamo.

One day in London he met a young man by chance, sized him up for a few minutes, liked him, hired him on the spot for $25,000 a year, arranged to transport young man and family to Argentina, dismissed young man with assurances that he'd see him in Buenos Aires next week after returning from Calcutta, and directed a secretary to get Buenos Aires on the phone.

Connection made, the tycoon said to his Argentine brigadier, "Just hired a young fellow for you. Can't remember his name,

but he's brilliant. Our kind of guy. Throws up every morning before breakfast."

Incredible numbers of people regard ruined digestion as the badge of the successful go-getter, and ulcer as his Purple Heart. For a considerable period before the advertising and public-relations industries began to overcome the self-consciousness of their rapid, adolescent growth, ulcer was so fashionable on Madison Avenue that denizens of the street who had no ulcers were inclined to wonder where they had failed. Some, fearful that their digestive good health might betray sloth, insensitivity or other peasant characteristics, actually carried antacid pills, which they took regularly with the approved long-suffering facial expression, as if members of the club. Such a man once groaned to me over a lunch served on the rocks with twists of lemon peel, "Guts are murdering me again. Can't avoid it. Miss too many meals. Work around the clock, you know. Too many cigarettes. Too many martinis. Kills me. Finally found a doctor who agrees it's an ulcer. Gave me these new pills. Here, try one. Only thing that keeps me going."

After publication of several news reports indicating that ulcer occurs among taxi drivers, farmers and other marchers in the ranks as often as among more charismatic types, the disease became less modish, if not less prevalent. The U.S. Public Health Service reports that about two and a half million Americans (1.4 percent of all) have ulcer. In 1959, it ranked sixteenth among all causes of death in the United States, killing more than ten thousand. On an average day, the government agency continues, at least forty-nine thousand ulcer sufferers are compelled by the illness to stay away from work. Statistical projections indicate that twenty million Americans now alive can expect to be afflicted with ulcer before they die.

These authoritative estimates make ulcer six times as prevalent as it was twenty-seven years ago, during the last government survey. The rise may be attributed to an increase in national susceptibility and/or an intensification of whatever one regards as the

cause of ulcer. But such theories are guesswork and should be accepted cautiously. The increased statistical occurrence of ulcer must also be at least partly due to modern methods of diagnosis, more accurate than those of the past.

Until recently diagnosis of ulcer was so harum-scarum that statistics about the disease were of little use. Figures compiled by Drs. Andrew C. Ivy, Morton I. Grossman and William H. Bachrach in their comprehensive book, *Peptic Ulcer* (The Blakiston Company, Philadelphia, 1950), show that estimates of ulcer incidence vary greatly from place to place, time to time and researcher to researcher. Some have found ulcer in fewer than one-half percent of the people they claimed to study, and others have found it in as many as twenty percent.

In 1910, for example, the thinkers at Marie Magdalen Hospital, St. Petersburg, Russia, discovered not a single case of ulcer among 3,500 patients. But, at the German Alexander Hospital in the same city, the ulcer rate compiled from autopsy reports was 2.9 percent between 1891 and 1911. Drs. Jack D. Welsh and Stewart Wolf comment in the *American Journal of Medicine,* "The only really safe inference . . . is that the incidence of ulcer . . . varies greatly. . . . No place or time seems to be altogether spared."

Ulcer is predominantly a male affliction, occurring three or four times as frequently among young men as among women of similar age, and more than twice as often among men forty-five or older as among women of that age. Some observers think women may be catching up, however, and one study declares that the rate is rising sharply among children.

The notion that ulcer is mainly an urban disease is questioned by government statistics, which show a slightly higher rate among residents of farm areas. The plot thickens: when *Patterns of Disease,* a periodical published by Parke, Davis & Company, questioned 2,258 physicians about ulcer, three-quarters of the group declared that their ulcer patients follow seasonal patterns, complaining of pain and other symptoms more in spring and fall than in winter and summer. Other studies confirm this and (to

thicken the plot altogether) show that ulcer appears far more often in persons with Type O blood than in those with Type A blood.

Regardless of blood type, season of year, or the social standing of the sufferer, the ulcer is much more likely to appear in the first inch of duodenum, just outside the stomach, than any place else in the digestive tract. This accounts for the term, "duodenal ulcer." The differences between duodenal ulcer and the kind that occurs in the stomach itself (gastric ulcer), are considerable, although both are called "peptic ulcer" because of the role played by the gastric juice. For the present we concern ourselves with the most common and painful ulcer, the duodenal, a sore not unlike an oversized mouth canker, but far more persistent.

Measuring from one to three-quarters of an inch in diameter, with sharp edges and a gray, hollowed-out base, the duodenal ulcer looks as if someone has been trying to gouge a hole in the intestinal wall. When the overactive stomach of the victim squirts raw hydrochloric acid into the duodenum, as it does too frequently, the corrosive fluid lands smack on the ulcer and, in plain language, digests it a little. One of the results is a harpoon-like pain that pierces the sufferer's midriff from abdominal wall to spine.

The pain often is relieved when the patient swallows food, milk or antacid chemicals. These mingle with the stomach acid, neutralizing and diluting it and rendering it harmless to the ulcer when, a few moments later, the agitated organ again sprays the duodenum. As soon as the neutralizing food or medicine have passed by the ulcer, however, the showers of un-neutralized acid resume and the pain recurs. Moreover, if the tissues around the ulcer are inflamed enough, pain may not be relieved by eating, or even by medication.

The reason that peptic ulcer seldom arises anywhere in the intestines except the duodenum is that, a bit beyond the site of most ulcers, the bile ducts discharge alkaline fluids into the canal. The fluids effectively neutralize the acid from the stomach, thus protecting the rest of the intestine from its assault.

Although persistent pain is often a sign of an unhealed ulcer, it should be noted that some ulcers are painless. In such cases pain may not be felt until the sore has actually perforated the wall of the intestine, spilling caustic gastric juice into the abdominal cavity. Perforations require surgical repair, of course. So do the obstructions caused by the scar tissue of some healed ulcers. And so does severe bleeding from an ulcer wound.

The vomiting that plagues so many ulcer victims is largely a response to the distress of pain. Also, some ulcer sufferers discover that they can relieve or avoid pain by discharging acid from the mouth rather than into the duodenum. They become skillful, if wretched, throwers-up.

Stewart Wolf declares that, while most first attacks of ulcer are easily controlled, subsequent ones give more trouble. "Ultimately," he says, "almost half of patients with duodenal ulcer find themselves in a state of more or less continuous pain in the pit of the stomach. Perhaps the healing of each new insult to the intestinal mucous membrane produces further scarring, with local deformity and devitalization of the tissue; it may be that scarred tissue becomes increasingly susceptible to subsequent ulceration. In any case, although relatively few patients die from their ulcers, a substantial proportion reach an intractable stage of almost continual suffering."

The cause of ulcer has been debated, sometimes acrimoniously, for centuries. The disease has been blamed on decayed teeth, diseased tonsils, inflamed prostate glands, appendicitis, faulty livers and gall bladders, intestinal viruses and bacteria, head colds, allergies, inadequate blood circulation in the stomach, acid blood, overacid gastric juice, hormone imbalances, heredity, vitamin deficiencies, tobacco, "irritating" foods such as coffee and whiskey, and physical torture, as from blows and burns. It also has been blamed on the wearing of belts rather than suspenders and, in 1917, a German expert felt so strongly about the supposedly ulcerous effects of constricting the female waist that he wrote

a deathless line in behalf of ulcer prevention: "Above all must be sounded the watchword, 'Off with the corsets.' "

In 1820 a Dr. Christopher R. Pemberton of London had come close to the truth when he wrote that the gastric "fluid, by its acrimony, irritates the nerves of the stomach, and this causes the pain." Thirty years later a Dr. F. Gunsburg hove even closer, asserting that ulcer was due to the oversecretion of "free acid" caused by a disturbance of the vagus nerve.

Modern medical scientists refuse to be trapped into arguments about the cause of ulcer. Indeed, they object to discussing the specific cause of any illness. Their attitude has become widespread throughout the medical profession and will, I trust, become universal. It represents a wholesome reaction against excesses committed in the name of science by over-zealous admirers of the immortal Louis Pasteur. The subject of disease causation is of immense importance, not alone to the ulcer sufferer, but to anyone who hopes to understand health.

In the fifth century B.C., Hippocrates saw health as an internal equilibrium of mind and body that enabled the individual to achieve harmony with his environment. In the presence of illness Hippocrates concerned himself more with the way of life of the patient than with detailed symptoms, regarding the one as more fundamental than the other. "After Silenus had helped himself to some cheese before bedtime," wrote the great physician, "he awoke the next day with painful indigestion. But Proclops, his friend, who had eaten an equal portion, suffered no ill effects." Hippocrates did not bother to indict the cheese as specific cause of Silenus' indisposition, nor was he worried about Silenus' stomach. Instead he discovered that Silenus had had a hectic day before eating the cheese, and his prescription directed the patient to rest a bit and cool off before eating.

The idea that each illness derived from a congress of environmental and internal factors held sway until late in the nineteenth century, when Pasteur and Robert Koch demonstrated that microbes were agents of disease. The scientists were able to cause

disease at will in their laboratories. Their germ theory opened new vistas to medicine: every microbial disease, it seemed, had a specific cause for which a specific cure could be found.

As most of us know, crustier elements in medical science were reluctant to accept Pasteur and Koch's work. Unfortunately, but altogether as usual, arguments were couched in terms of stark black or white. Adherents of the germ theory wanted to jettison all pre-existing knowledge about the nature of man. At the other extreme, opponents of the germ theory declined to accept the inescapable evidence that implicated tiny microorganisms in disease.

Pasteur's elegant adversary, Pidoux, declaimed, "Disease is the common result of a variety of diverse external and internal causes [that] bring about the destruction of an organ by a number of roads which the hygienist and the physician must endeavor to close." He was right about that, even if he was wrong to reject the germ theory. And Pasteur also was right, having written that the reaction of an individual to microbial infection was determined not only by the virulence of the germ but by *the individual's inherited constitution, his state of mind and environmental factors such as climate and food.* Perhaps Pasteur did not emphasize this truth sufficiently; his supporters paid no attention to it. The search for specific causes and cures became an obsession in world medicine, and still is. It was accompanied, and still is, by experimental health research in which the suffering organ is isolated (intellectually, if not actually) from the influences of its environment. Thus, we read medical books and articles about the stomach that contain only the most formal and superficial suggestions that the organ, in its living state, is an integral part of a human being. Such writings seldom recognize that the health of the stomach depends mainly on the individual's reactions to the world, including its germs and its foods, but not excluding its myriad other influences.

The great French physiologist, Claude Bernard, friend of Pasteur and enthusiastic correspondent of William Beaumont,

foresaw all this. He was the father of modern physiology, having concerned himself with the dynamic *processes* of the body—the interactions of nerves, fluids and organs—rather than with mechanical description of isolated phenomena. Recognizing the importance of Pasteur's germ theory, he predicted ruefully that it would divert the attention of medicine from man to microbe, and would encourage overemphasis on the infectious properties of the microbe.

What has been overlooked almost entirely by some enthusiasts of the germ theory is that Pasteur and Koch produced disease under "ideal" laboratory conditions, segregating their experimental subjects from the conditions of normal life and, in fact, rendering them more susceptible to disease than they might have been outside the laboratory. The experiments proved only that germs were agents of disease, and indispensable to the diseases with which they were associated. But the experiments did not prove, nor has any experiment since proved, that a germ is the exclusive cause of a disease. Too many people escape illness during epidemics for germs to be the sole, or even the primary, cause of anyone's illness. When medical scientists—from Bernard to Pavlov to Cannon to Dubos to Harold Wolff and Stewart Wolf—explored this truth they discovered that the concept of specific cause is also unreliable in the study of non-infectious illnesses.

In their excellent book, *Headaches, Their Nature and Treatment* (Little, Brown & Co., Boston, 1953) Wolf and Wolff wrote:

> . . . if "cause" means a thing which determines whether or not a disease or disorder will occur, very little can be said about cause with reference to anything in medicine. Physicians have for centuries been concerned with ultimate causes of diseases, and from time to time it has been necessary for them to modify their notions about cause. Although the discovery a century ago of the role of microorganisms promised to yield a simple and lastingly serviceable concept, attempts to understand disease in terms of single causative factors have not been fruitful even in microbial diseases. In tuberculosis, for example, we cannot actually assign a cause. The tubercle bacillus is an essential

element, but the presence of large numbers of tubercle bacilli does not determine that the exposed individual will be infected. The presence of the microbe may instead promote immunity. If infection does occur the tubercle bacillus cannot be said to determine whether tuberculosis of the lungs, spine or kidneys will result.

. . . The thing which precipitates a given reaction is not necessarily its cause, because the same stimulus or event may be followed by a variety of reactions in different people or in the same person at different times, depending on many other factors . . . The search for causes may be a search for the will-o'-the-wisp, the philosopher's stone. It may be well to abandon the search for causes of disease and bodily disorders and instead turn our attention to mechanisms and ways in which they can be turned off—or better, to the factors in the person or in his environment which make it likely that these mechanisms will be brought into play.

The modern drugs, serums and vaccines that help man to overcome bacterial and viral invasion would not have been discovered, or even sought, had not medical science become concerned with specific causes and specific cures. Nobody with the slightest knowledge of health would be silly enough to minimize the significance of these life-saving developments. It is necessary, however, to point out that the doctrine of specific cause and cure has armed mankind against few of his illnesses and has left him helpless against most. In *Mirage of Health,* René Dubos states the case more lucidly than it has ever been stated before:

The nineteenth-century sanitarians believed that health and happiness could be found only through a return to the ways of nature. Modern man, probably no wiser but certainly more conceited, now claims that the royal avenue to the control of disease is through scientific knowledge and medical technology. "Health is purchasable," proclaimed one of the leaders of American medicine. Yet, while the modern American boasts of the scientific management of his body and soul, his expectancy of life past the age of forty-five is hardly greater today than it was several decades ago and is shorter than that of many European people of the present generation. He claims the highest

standard of living in the world, but ten percent of his income must go for medical care and he cannot build hospitals fast enough to accommodate the sick. He is encouraged to believe that money can create drugs for the cure of heart disease, cancer and mental disease, but he makes no worthwhile effort to recognize, let alone correct, the mismanagements of his everyday life that contribute to the high incidence of these conditions. . . . Is it not a delusion to proclaim the present state of health as the best in the history of the world, at a time when increasing numbers of persons in our society depend on drugs and on doctors for meeting the ordinary problems of everyday life?

This from a world authority on bacterial disease, biographer of Pasteur, and discoverer of tyrothricin, the first antibiotic "wonder drug" used on a large scale. The implications are evident enough: the physician may be able to *identify* any illness at a glance, or by running diagnostic tests, but he cannot treat most illnesses properly without learning a great deal about the patient. The casual prescription for an antibiotic saves some lives and helps other patients to recover more quickly than they might have without the drug, but pushbutton medicine avails little against the kind of organic disorders that concern the reader of this book. His ulcer or his constipation results from what Stewart Wolf calls "an algebraic equation in which many relevant factors contribute for and against. The inherent characteristics of the individual person must be considered as well as any forces that may be brought to bear on him."

Refusing to become embroiled in debates about whether ulcer is caused by sinus trouble, corsets, or coffee, Wolf prefers to discuss the mechanisms of ulcer:

Although controversy over the supposed cause of ulcer continues, there is fairly widespread acceptance of the belief that stresses in everyday life activate centers in the base of the brain which in turn initiate the mechanisms responsible for increased activity of the stomach. There are two known pathways involved in this process. One is via the tenth cranial, or vagus nerve, which originates in the brainstem and travels down to envelope the walls of the stomach. The other is by way

of the pituitary gland, which lies adjacent to the area in question at the base of the brain and activates the adrenal gland. The adrenal hormones are capable of accelerating gastric function even in the absence of vagus nerves. Perhaps both of these mechanisms may be implicated or perhaps interest in them will wane as we see things more clearly in the future.

The stomach of the peptic ulcer patient [continues Wolf] differs from the normal only in that it is in a state of exaggerated, sustained overfunction. A twenty-four-hour measurement of the quantity of gastric juice secreted in the stomach of such a patient may show as much as a tenfold increase over the normal. The contractions of the stomach are similarly enhanced so that meals are flushed out with undue rapidity and hunger pains occur with greater frequency. All of this stepped-up activity requires enhanced blood flow. Thus the lining membrane of the stomach is likely to be intensely red and turgid. Such engorgement causes the membrane to be unduly fragile. It has a scratched appearance, and is more susceptible to pain. Contractions of an intensity that is painless when the stomach is in its normal state may be painful when the stomach is in a state of sustained engorgement. Thus, pains typical of peptic ulcer may occur even before an actual ulcer is present.

Why does the stomach of an ulcer sufferer act that way? Because of adaptation to life stresses, as Wolf says—but why?

Wolf answers:

The gastric behavior of a peptic ulcer patient is as if he were always devouring or receiving nourishment. One of the most effective elements in the treatment of the disease is more or less continuous feeding. It should be remembered that, in the jungle period of man's evolutionary development, the appropriate thing to do with an opponent was to kill and eat him. Thus the gastric hypersecretion of acid and pepsin in circumstances that arouse hostility or resentment may be a purposeful pattern acquired through evolution.

Perhaps the pattern has not been obsolete long enough for civilized man to have lost it through further mutations. It may be more than coincidence, therefore, that those who have studied patients with peptic ulcer have found them a lean, hungry, competitive lot.

Don't go away mad. Wolf does not accuse all peptic ulcer patients of being avaricious. In fact, he seldom accuses anybody of anything, being more interested in doctoring than in judging. Nor does he suggest that all lean, hungry, competitive individuals are ulcerous. In short, he does not say that competitiveness causes ulcer. But the lean, hungry aspect is frequently a significant factor in the algebraic equation that resolves in ulcer.

One difficulty about winning support for this contention is that the kind of people prone to ulcer are so often outwardly independent, well-controlled types whose inner conflicts are well concealed from the world and from themselves. Although they might have the most to gain from implementation of theories that relate their ulcers to their ways of life, they are apt to find any intimation of personal error or weakness downright offensive.

Psychoanalysts, headed by Dr. Franz Alexander, have been saying for years that the ulcer sufferer is not nearly the rugged individualist he imagines himself to be. He craves (unconsciously, of course) to be petted and snuggled and relieved of responsibility, they say. More specifically, they go on, he is suffused with a yearning to be held in his mother's arms and suckled, which supposedly accounts for the overactivity of his stomach. In his daily life he has an almost insatiable need for the attention, support and recognition that he used to get, or did not get, from his mother.

Even non-psychoanalytic physicians who have studied ulcer patients at close range affirm that the hunger for attention and recognition runs high among them. These physicians are less likely, however, to trace the attitude to infantile frustrations about the maternal nipple, mainly because matters of that kind are usually beyond the patient's recollection. Often enough the individual's life style can be explained to everyone's satisfaction in terms of conscious, remembered experience.

Like all other illnesses, peptic ulcer is a situational difficulty. It is a faulty adaptation to the environment. When the cab driver comes home after fighting traffic and being undertipped

and placating unreasonable customers and listening to the pleasantries of policemen and nursing a worn brake and wondering if he should ever have left the farm, his wife asks why he isn't more talkative. He notices that his ulcer is acting up again. He may even know why, although neither he nor his doctor could possibly select the single "cause" of the trouble. Similar abdominal reactions are the daily lot of many other independent souls whose vocational betterment demands efficient, expeditious, imaginative performance under what frequently strikes them as unreasonable auspices.

It must be a law of nature. At Walter Reed Hospital, Dr. J. V. Brady and colleagues placed pairs of monkeys side by side in restraining chairs. One member of each pair of monkeys was provided with a lever which, if pulled at the right time, prevented both animals from getting an electric shock. The second monkey of the pair had only a dummy lever. The animals were subjected to shock for periods of six hours. The first, or executive monkey, quickly learned that he could prevent shock to himself and his partner by pulling the lever at the strategic time. The second monkey learned just as quickly that his lever was a dummy, and ignored it thenceforth. Every executive monkey got a duodenal ulcer. But no passive monkey got one. It is fair to conclude that the executive responsibilities made the big difference. But why did the monkeys get ulcer instead of any of forty other possible diseases? And why do men get ulcer instead of high blood pressure or sinusitis?

Stewart Wolf suggests that "the reason for the occurrence of gastric overfunction instead of some other reaction may be hidden in the nature of the man himself and therefore in the peculiar significance of the event to him. A blow on the cheek from the glove of a rival is a straightforward enough stimulus, and yet one could not predict from the nature of the stimulus alone what the reaction would be of the one who was struck. The reaction would not depend exclusively on his constitution, his temperament or his experience. Many factors would determine which of several

possible courses he would elect. He might choose pistols, sabres or boxing gloves, or he might run away, or even collapse at the feet of his challenger, or sidestep the incident by retracting or making a joke. Why he chooses one course rather than another depends on a myriad of factors including his inherited tendencies, his cultural background, his habits and skills, etc. Similar considerations taken together determine whether or not and to what extent a man will react to troublesome situations with an overactive stomach."

Be that as it may, peptic ulcer is a striver's disease. It occurs most often among persons whose style is independence but whose independence is frustrated. Thus it is found in men who lead the tempestuous life of a taxi-driver rather than make a few dollars less a week in more routine employment; it is found in independent farmers who risk much on the vagaries of the weather and on the worse vagaries of commodity gamblers in Chicago and New York; it is found wherever rewards are potentially great and the penalty for failure is severe. If it is found in a hod carrier, as it often may be, the patient usually turns out to have a shrewish wife or an unrequited desire to be gang foreman.

Medical schools are notorious for the high incidence of ulcer among their students. So are certain military establishments and other institutions where individuals compete for favor from the high-handed. I am told that a physician once found peptic ulcer in about 30 percent of the officers at the Staff and Command School at Fort Leavenworth, Kansas, and a certain medical Poobah in a famous hospital is known as "Ulcer Bob," because so many of the young residents who work under him get ulcer from trying to adapt to his philosophy of divide and rule.

The celebrated Dutch investigator, Dr. J. J. Groen, noticed that persons who had been his ulcer patients before World War II actually improved in the anguished but *predictable* environment of a German prison camp. When the war ended and they returned to their former social setting with its challenges and insecurities, their ulcers flared again. Another study showed that the incidence

of ulcer increased among the civilian population of Great Britain, Sweden and Norway during the years of Nazi bombing. Another disclosed that the Swedish sea pilots most likely to get ulcer are those stationed in the busiest ports.

One interesting patient was a lawyer, an only child whose immigrant Russian-Jewish parents had financed his education at great sacrifice and, of course, expected much of him. He did well in college and law school and was taken into a law firm run by gentiles. His employers were delighted with his talents, piled all the most difficult cases on him, but neglected to reward his years of outstanding service with a partnership. His treatment as a second-class citizen galled him and evoked endless nagging from his ambitious mother and equally ambitious wife. He got an ulcer.

When it finally appeared that his employers could no longer exclude him from the firm without embarrassing themselves among their professional peers, they hired a second Jewish lawyer. The head of the firm then told the patient, "We'd like to take you in as a partner, but it would not be fair to the other guy. He might think we were prejudiced, or something." The man's ulcer now began bleeding, and he had to be hospitalized for a while.

When the war broke out, the patient's Jewish colleague entered the Army. The older members of the firm were busy in Washington and elsewhere, and our friend was running the office. Despite the heavy work and long hours his ulcer symptoms disappeared. He felt well until shortly after the war, when his associates returned to the office and reestablished the previous frustrating situation. The patient's abdominal pain recurred. In fact it incapacitated him. Again he was admitted to the hospital.

After a few days of rest, encouragement, strong assurance and other pertinent medical care, his symptoms subsided. At this point he participated in an experiment. He swallowed a tube that was attached to an apparatus that records the muscular movements of the stomach. He then was interviewed. At first his stomach activity was normal but then his physician asked him why he

had failed to meet his mother's ambitions and whether he felt that her sacrifice in his behalf had been justified. Almost immediately, his stomach began to churn. The lawyer showed no outward evidence of nervous tension, being as well controlled as most ulcer patients are, but his overactive stomach betrayed him. As he proceeded with his forceful, cogent justification for the way he had been living his life, the gastric contractions became more vigorous and pain began. The physician then gave him a shot of sodium amytal ("truth serum"), and spoke to him in terms of the warmest encouragement and assurance. The exaggerated gastric contractions stopped almost at once. The pain disappeared and the patient's tightly-controlled poise dropped away. He clung to the physician's hand, weeping: "I've tried so hard, so hard."

It must now be evident that the inability of medicine to unearth the specific cause of peptic ulcer is no handicap. While research is properly directed toward greater elucidation of the specific physiological mechanisms of the disease, medical treatment is most effective when guided by knowledge of (a) the situations most likely to result in ulcer, and (b) the life styles most likely to react to such situations with excess secretion of gastric juice.

The greater incidence of ulcer among persons with Type O blood and the lesser incidence among persons with Type A is a puzzle for which no solution is yet available. One can say, of course, that Type O individuals apparently have constitutions more susceptible to duodenal ulceration. But nobody knows why. Furthermore, the statistics do not mean that everyone with Type O blood had better start watching out for ulcer symptoms: uncountable millions of human beings with Type O never have stomach trouble of any consequence, and hundreds of thousands of ulcers exist in the duodenums of persons with Type A blood, statistics notwithstanding.

As to the seasonal flare-ups of duodenal ulcer, the only possible interpretation is that the affairs of man likewise flare up in spring and fall.

About one ulcer in every six, eight, ten or twelve (depending on

your medical statistician) occurs not in the duodenum but in the stomach itself. Gastric ulcer, as this larger but usually less painful lesion is called, apparently has something to do with a deficiency in the protective secretion of the mucous membrane. It occurs in the presence of gastric juice less acid than that of many duodenal ulcer patients and, in about one case out of ten, it is associated with stomach cancer. Because cancer almost never arises in connection with duodenal ulcer,* physicians are beginning to agree that the two kinds of ulcer are different diseases.

What's more, gastric ulcer may itself be more than one disease. Ninety percent of gastric ulcers are benign and, so far as has been determined, remain so. Another five percent are diagnosable as malignant, but it is difficult to tell whether they are a prelude to or a consequence of stomach cancer. Another five percent seem to be benign but turn out later to be cancerous. Many benign gastric ulcers clear up when treated along the lines to be reviewed in the next chapter. Cancer is, of course, another matter and will have a later chapter of its own.

* Few cases of duodenal cancer have been reported in medical literature.

Chapter 6

The Treatment of Ulcer

The ability of the human body to repair itself is strikingly evident in peptic ulcer. The painful lesions are deeply eroded insignia of years of anguished living, but they heal in days if given half a chance.

Some ulcers disappear without notice and never return. Recovery of that kind is a delightful mystery to the liberated sufferer, who may have had no medical care in months and may never have had medical care at all. Hippocrates reported such a case of spontaneous cure twenty-five centuries ago and the phenomenon has been a goad to thoughtful physicians ever since.

Unfortunately, the seemingly spontaneous, permanent cure of ulcer is far less common than the recurrence of ulcer after it has healed. Even the most casual explorer of the medical literature comes upon thousands of pharmaceutical, dietary and surgical treatments, each of which has been fantastically successful at first but has turned out later to be of no lasting avail. The developers of new ulcer treatments are beginning to learn not to delude themselves: most of them realize that every ulcer treatment works on almost every ulcer patient—for a while.

The typical ulcer patient can be relied on to react magnificently to the new drug or the new diet (and, in thousands upon thousands of cases, the new surgical procedure), for about six weeks. But then, just when optimism seems justified, the symptoms break through again, misery achieves its former level and the search is resumed for an even newer drug, diet or operation.

The principle that governs such illusory cures is also at work in many cases of enduringly successful treatment. It is the principle of the placebo (plah*SEE*bo) effect, a phenomenon present to some extent in every doctor-patient relationship. The placebo effect should be more widely understood than it is. It explains much about health and medicine.

"Placebo" is Latin for "I will please," or "placate." The prescriptions that old-time physicians wrote for "tincture of condurango" (milk sugar), or "fluidextract of cimicifuga" (snakeroot), were for placebos—pills or potions with no known chemical effect on the human body, but prescribed to appease difficult patients with a display of learned activity. Yet tincture of condurango has cured or relieved the ailments of countless human beings, because the placebo effect can be remarkably potent. Cures of that kind are most likely to occur when the patient has great motivation to improve and views the physician with unqualified trust ("I finally went to Smith. Biggest man at Mount Sinai." Or, "I found this funny little old doc tucked away in the South part of town. Wears his glasses on a black ribbon. Office is one flight up over a delicatessen. Gave the answer to my sinusitis right away.").

The placebo effect occurs with and without the intent of the physician. He does not have to prescribe notorious neutral substances, like milk-sugar capsules, to achieve it. For example, in the days when he believed sincerely that aureomycin was a specific cure for atypical pneumonia, he prescribed the drug and seemed to get pretty good results. Later, when it developed that milk sugar would have done approximately as well, the physician saw that, as far as atypical pneumonia was concerned, aureomycin had been a placebo. The same is true of innumerable drugs, diets and

surgical operations that have been used by physicians who believed in all good faith that they were undertaking the best possible treatment of ulcer, when they actually were exerting nothing but a placebo effect. The drugs, diets and operations were physically, chemically and biologically useless for ulcer.

Dr. O. H. Perry Pepper once wrote in the *American Journal of Pharmacology:* "The giving of a placebo . . . seems to be a function of the physician which, like certain of the functions of the body, is not to be mentioned in polite society."

This is understandable. A physician who tries with all the knowledge and dedication at his command to do something for the patient becomes the victim of unpoetic injustice when it develops later that he unwittingly had been prescribing placebos. The fact that the placebos were associated with recovery in a certain percentage of cases only compounds confusion and intensifies embarrassment, especially when physician and patient are accustomed to believing that every illness is supposed to have a specific cause and a specific cure.

Stewart Wolf clarified the problem in an article, "The Pharmacology of Placebos," published several years ago in *Pharmacological Reviews:*

> Placebos have been used for centuries by physicians under pressure to "do something," but wishing to do no harm. Traditionally, the function of the placebo was to pacify without actually benefitting the patient. The benefit, however, has proved to be unexpectedly lavish. Not only has the hopeful reassurance of placebos engendered in patients a feeling of increased well being, but recent experimental evidence has shown that placebo administration may be followed by substantial and measurable changes in bodily mechanisms. Therefore, since placebos do a great deal more than placate or pacify, a new definition may be offered as follows: *Placebo effect = any effect attributable to a pill, potion or procedure, but not to its* [*chemical or physical*] *properties.* Placebo effects derive from the significance to the patient of the whole situation surrounding the therapeutic efforts. Thereby is implied a connection between a particular . . . organ and the interpretive areas of the brain . . . Relatively few of the routes

are really well understood but certain it is that virtually all organs and organ systems are capable of responding to meaningful situations, among them the administration of placebos.

Spelling it out still further: Just as one meaningful situation may precipitate illness, another may cure illness, but doctor and patient may be unaware of the influence exerted by the situation.

Unawareness of the placebo effect explains why faddish treatments, sincerely devised, have gained acceptance they did not deserve. A good example is the story of the beloved Dr. Edward Trudeau, who went to his favorite spot in the Adirondack Mountains to die of tuberculosis. Instead of dying he recovered and credited his triumph to the mountain air. Wolf, an admirer of Trudeau's devotion to the ill, comments, "His experience in the mountain air fostered a placebo ritual which long outlived him. He might as well have attributed his recovery to the nourishing quality of the rabbits he shot on his hillside. We now know that mountain air is of no importance in the treatment of tuberculosis, but rest is."

He continues, "The man who first stumbled onto sulfur water in the first spa was greatly impressed by its curative properties. The sulfur water, so it seemed, proved highly efficacious for him and for others for many years. There was no question that people got very much better of various forms of arthritis, asthma and other disorders when they drank these sulfurous waters or immersed themselves in them. People still go to spas, still improve vastly, but don't bother with drinking or bathing in the water! The realization of the irrelevance of the waters themselves was so gradual that we never really got the impact."

George Washington treated his ills with a magnetic device, a placebo sold him by the quack Elisha Perkins. Military and political dignitaries of the nineteenth century signed heartfelt testimonials to the curative properties of herb elixirs, alcoholic placebos that were somewhat stronger, but no more curative, than booze.

At several lively institutions of medical learning it has been demonstrated that surgical patients suffer less post-operative pain and require far less morphine than usual if they are told to ring for a nurse whenever they feel the slightest discomfort. The nurse appears promptly and administers a hypodermic of salt water—a harmless placebo with no power to kill pain. The placebo effect is related in some way to the patient's response to prompt, solicitous attention. [It also may be a kind of conditioned reflex. Experimentation here and in the Soviet Union has established that, when saline water is covertly substituted for morphine, addicts suffer no withdrawal symptoms. Their withdrawal symptoms begin when the salt water is withheld and no other injection is substituted.]

The procedure of supplementing infrequent morphine injections with frequent saline-water injections has not become standard post-operative practice, partly because most hospitals do not have enough nurses to guarantee quick response to every need, and partly because many nurses tend to regard as a nut, and treat accordingly, any patient who gets surcease from a shot of saline water.

The field of pharmacology is a happy hunting ground for collectors of placebo lore. I now offer some of that kind, not only for the entertainment of the reader but to implant in his mind, I hope permanently, a full appreciation of the placebo effect and its relevance to health.

Ipecac will make anyone vomit, unless events have a more powerful, contrary effect. Stewart Wolf tells about a woman whose pregnancy was complicated by repeated nausea and vomiting. In studying her, he satisfied himself that injection of ten cubic centimetres of ipecac could make her sick. One day when she was nauseated, but not by ipecac, he told her, "We have finally turned up something that is going to eliminate the nausea you have had." He then gave her ten cc. of ipecac. Within twenty minutes her nausea was gone. Recording instruments showed that her stomach was contracting normally, which never happens in nausea. The

placebo effect had overcome the nauseating effects of her pregnancy plus the nauseating effects of ipecac.

Some studies have shown that placebo pills are as effective against rheumatic pain as aspirin, and have just as many untoward side-effects.

"When isoniazid was first tried in tuberculosis," writes Wolf, "patients were photographed dancing in the hospital corridors. Since the drug could not have cured the disease in this length of time, it was concluded that it was having an euphorogenic effect [causing an exaggerated, elated sense of health]. This was held to be responsible for the patients' dancing in the corridors. Patients are no longer dancing and it is now clear that isoniazid does not induce euphoria. The early patients who received the drug were euphoric without a doubt, but the euphoria was not due to the pharmacodynamic properties of the drug. It was probably due to the fact that the physicians of these patients in the tuberculosis hospitals had just been suddenly converted from jailers to therapists, and it was their renewed hope and faith and pleasure in this event that rubbed off on the patients and produced euphoria. We must remember that we are capable of the same mistakes that were made by our forefathers."

Drs. L. H. Gliedman, W. Horsley Gantt and H. A. Teitelbaum wrote in the *American Journal of Psychiatry* about two groups of patients with bleeding ulcer who were treated with a placebo. One group was assured by a physician that the preparation would undoubtedly bring relief. The other group was told by a nurse that an experimental medicine would be administered and that the results were unpredictable. In the encouraged group, seventy percent of the patients got excellent results from the placebo, but in the other group only twenty-five percent improved.

Eosinophils are white blood cells which multiply in certain diseases and are suppressed by ACTH, the pituitary hormone that stimulates the adrenal gland. These cells are cited by Wolf as outstanding proof that the placebo effect is neither imaginary nor the result of hypnotic suggestion. "We are able to produce eosino-

philia—an increase in the eosinophils—by discussing meaningful topics or administering placebos," he reports. "Eosinophilia obviously could not be achieved by suggestion because it is a phenomenon of which the patient may have no knowledge whatever. Perhaps a person could think himself into a sweat or a heart palpitation or hives, but hardly eosinophilia."

A man who had been suffering from continuous asthma for seventeen years was a favorite subject on whom to test new drugs. The product of one pharmaceutical firm finally seemed to work: when the patient was given the agent he was free of asthma; when it was withheld the asthma returned. Accordingly, his physician substituted a placebo without the patient's knowledge. Asthma was not relieved. Shifts from agent to placebo and back again were carried out several times with consistent results in favor of the drug. When the company was approached for an additional supply of the material, its representative confided that, because it had had much trouble with baseless, enthusiastic reports, the firm had in this instance sent along a placebo instead of the drug. The doctor had not *told* the patient which dosages were "drug" and which were placebo, but had somehow transmitted the idea anyway, and the patient had responded as if one placebo were an effective drug and the other were not.

If placebos can be made to work so well, why are they not used as a matter of course to prevent and cure illness? The answer is that they are used rather more often than the profession likes. But, as shown earlier, they seldom are used deliberately in day-to-day practice. Drug after drug, operation after operation and diet after diet are used with temporary success against disease after disease. What finally wrecks the placebo is its total irrelevance to the biochemistry of the disease. As soon as it fails to relieve symptoms in considerable numbers of cases, failure becomes contagious. Word spreads through the profession and from the disenchanted doctors to the public. The vitamin pill that cured last year's colds is useless against this year's.

The placebo effect can be achieved by a drug manufacturer who saturates the public consciousness with advertising and publicity about his miraculous product. For example, thousands of people are convinced that aspirin tablets do not relieve their pain but that aspirin-caffeine tablets or effervescent aspirin drinks do. Thousands of others begin to feel better after dosing themselves for a few days with insistently advertised blood tonics, the physical and chemical properties of which have no bearing on what ails them.

Most examples of placebo effect depend, however, on the personal behavior of the physician in his relations with the patient. Even when no drugs or diets are involved, the warm, sympathetic, authoritative, revered doctor often exerts by mere attentiveness a placebo effect powerful enough to prevent or cure illness. The placebo effect of certain physicians on certain patients explains why one physician will achieve lasting cures among sufferers from peptic ulcer while a second, using the same diets and drugs, will find that symptoms begin recurring after a month or two.

Because enthusiasm runs almost as high among medical scientists as among the rest of us, and is similarly intoxicating, the difference between placebo effect and universally applicable therapy usually has to be hammered out by a scientist other than the one who devises the new diet, drug or operation. But not always. An enlightening example of scientific candor is provided by the celebrated Dr. David Sandweiss, who thought that he and his colleagues were hot on the trail of discovery when they noticed that pregnancy seemed to prevent or relieve the symptoms of peptic ulcer. They felt that extracts from the urine of pregnant women had a promising medicinal effect. "On further investigation, however," he writes, "we were able to show that similar results could be obtained with nonpregnant female urine, and to a lesser extent with male urine." If pregnant women are less ulcerous than nonpregnant women or males, the answer lies elsewhere than in the bladder.

When dietary deprivation relieves the symptoms of ulcer, as it always does for a while, placebo effect is the only reason. If the

sufferer were to believe that his ulcer came from sunspots rather than from something he ate, he could achieve equally good—and equally short-lived—results by going around in a green eyeshade to protect himself from rays.

Dietary deprivation punishes the ulcer sufferer by eliminating tasty food and drink from his meals. If he is of puritanical bent, the punishment may make him feel shriven for a time. His ulcer will heal, briefly. But the dietary tinkering will have no lasting effect on his overactive stomach.

Paulus Aeginata, a celebrated Greek physician of the seventh century A.D., summarized medical tradition: "When there is an ulcer of the stomach or bowels, the patient must abstain from all acrid food and drink and use remedies of a soothing nature. . . ." The purpose, then as now, was to dilute and neutralize the acid gastric juice to avoid irritating the tender ulcer. Early in the nineteenth century, several investigators began promoting what has become the staple of all ulcer diets, milk. Except when taken in extreme amounts, milk and cream remain the best dietary friends of the ulcerous. Whether the patient be treated according to the teachings of modern science or the dictates of tradition, milk and cream dilute and neutralize gastric acid, and their fat activates the hormonal mechanism that retards gastric activity.

In 1871 one Hugo Wilhelm von Ziemssen, a German professor of pathology, suggested that there was something better than milk: Glauber's salt, a cathartic. The stomach of the ulcer patient, said the professor, needs to be cleaned out and left in a state of complete rest. No food should be taken for days, so that the stomach will stop its harmful secretions. This monumental misunderstanding of gastric function started a medical mode that persisted until a few decades ago. If anyone benefitted from lying in bed without food, with his stomach pumping raw gastric juice onto his ulcer at regular intervals, it was because of the placebo effect of hospitalization. Come what may, the stomach automatically becomes active and secretes hydrochloric acid every three or four hours; the stomach of an ulcer patient does this at much briefer intervals. It

must be obvious that the fasting treatment should have been sheer torture for the patient.

If the experience of rest and solicitous care had not quieted the stomachs of patients forced to fast, their ulcers should have begun to perforate in a few days. And the pain should have been deadly. But the fasting treatment worked—for a while—on many patients. When they left to go home, they felt much better and their pains often did not recur until they had been back in the rat race for a week or two.

In 1915 Dr. Bertram W. Sippy, American, changed all this by pointing out that frequent feeding of milk and cream, elimination of "rough" foods, and administration of alkaline drugs assured "an accurate neutralization of all free hydrochloric acid during the time that food and its accompanying secretion are present in the stomach." He was right, as far as he went, but the soft diets his disciples still prescribe are enough to make a strong man weep. Moreover, they are unnecessary and sometimes they encourage hazardous dietary practices.

An extremist patient who decides that milk and cream are the ultimate answers to his ills is perfectly capable of removing himself from the doctor's care and putting himself on a straight dairy diet. He probably will have good cause to boast that his ulcer no longer bothers him. The natural tendency of an ulcer to heal is assisted by frequent feedings of milk and cream. But if the milk diet is prolonged, the patient develops a fascinating combination of obesity and malnutrition. The obesity comes from all the calories consumed, the malnutrition results from the inadequate protein, vitamin and iron content of milk.* In time, and especially if the sufferer supplements the milk with baking soda, so much calcium collects in the extremist's blood that he develops kidney stones. The disease, known as Burnett's syndrome, is sometimes fatal and is due, in most cases, to dietary tinkering of this kind.

* I hereby decline to answer complaints from the Dairy Association but hasten to affirm that milk is a good source of high-quality protein (even if not quite as good as eggs and meat).

In experiments with Tom, Stewart Wolf demonstrated that flooding the stomach with cream and other bland, fatty food may help but is no guarantee against ulcerous flare-ups. When Tom's stomach was functioning normally, a fatty breakfast took more than five and one-half hours to pass to the small intestine. But if his stomach was overactive because of some frustrating situation, the fatty meal disappeared in much less time. Had Tom been an ulcer sufferer, he would have suffered painful damage before the next meal, because undiluted acid would have splashed onto his sore.

Some ulcer patients are forbidden, or occasionally forbid themselves, to take pork or beef or raw vegetables or fruits or spices or condiments or fried foods or sweets or acid-tasting foods or salty foods or clear soups. Prohibitions of that kind are mighty impressive to the patient and his friends, but are supported by tradition, not by medical science.

No food damages the tissues of stomach or duodenum. A dash of Tabasco may give brief pain when it touches the tender ulcer, but is not certain to do so and, in any event, causes no harm. The patient who would rather pass up Tabasco than risk brief pain can dine accordingly and live happily ever after. But to pass up meats, fried foods, sweets, vegetables and fruits is to distort the diet beyond all reason. Dr. J. J. Groen's ulcer patients, who recovered in the harsh but predictable environment of Nazi prison camps, did so on diets of the poorest, crudest, roughest, most "irritating" foods. And when they returned to the gracious but hectic lives and the good food they had known before the war, their ulcers returned. The rough food did not cure their ulcers. The good food did not rekindle their ulcers. In each phase, food was of no importance to ulcer.

The belief that certain foods accelerate the activity of the stomach and enhance the secretion of gastric juice is well-founded, yet this rarely justifies eliminating such foods from the diet. Stewart Wolf emphasizes: "Protein foods stimulate the gastric glands and so do alcohol and coffee. But it is not safe to restrict the protein

intake of patients with peptic ulcer. When this has been done in the past, malnutrition in various forms has resulted. What's more, the stimulating effects of meats are transitory and not very intense in comparison with the stimulating effects of life situations."

Most modern gastroenterologists believe that the same can be said about alcohol and coffee. The beverages might as well be eliminated by people who are convinced they cause ulcer pain, but there seldom is more urgent reason to eliminate them. A cocktail before dinner may cause trouble if the stomach is empty, but a glass of wine with dinner provides a nice lift and does more good than harm. And coffee taken with cream on a full stomach should not be feared.

The ban on fried foods is among the least comprehensible features of some ulcer diets. Although believers in old wives' tales have felt for years that fried foods are somehow less wholesome and less digestible than baked, roasted, broiled or boiled foods, the only difference is that fried foods are encrusted with cooked fat. Fat, of course, is not only good to eat but slows the stomach. One might expect that fried foods would therefore be prescribed for ulcer patients, not prohibited.

Having tested every imaginable kind of food on the stomachs and duodenums of numerous patients, physicians responsive to the lessons of science are confident that the only dietary prescription appropriate to ulcer is this: eat anything you like, but eat frequently.

The governing principle is to keep the stomach occupied, so that its acid will be used for digestive purposes and will not attack the ulcer. Milk and cream are strenuously recommended, not as cure-alls but because they exert a notable neutralizing effect and are especially pleasant to take between meals. An ulcer patient who eats four or five modest meals a day and takes milk or other snacks between times is almost sure to benefit. He may put on a little weight, but informal experimentation and calorie watching can protect him from outright obesity.

In 1952, Dr. J. S. Lawrence reported in the leading British

medical periodical, *Lancet,* that he had treated one group of peptic ulcer patients with an egg-and-milk diet and another group with a "full convalescent" diet including fried foods, cheese and pork pies, and without sieved or otherwise specially prepared vegetables and fruits. Both groups were given the same drugs and each patient was kept in bed until his ulcer healed. Healing was obtained in ninety-three percent of the patients in each group, but the ones on an adult diet recovered in an average of fifty-eight days and the ones on baby food took sixty-four days.

Lawrence wrote that some patients on the full diet "were first dubious of a regimen so much at variance with their earlier instructions. When, however, it was explained to them that such food was required to inactivate their overpotent gastric juice, their anxiety was allayed and the rapid relief which followed in most instances quickly dispelled their doubts."

Important though they are in the treatment of peptic ulcer, frequent feedings usually require chemical supplementation. Most patients use antacid drugs to neutralize gastric juice that may give trouble between meals. The most familiar antacid is bicarbonate of soda (baking soda), a teaspoonful of which in a half glass of water usually interrupts the gnawing pain of ulcer for a few minutes. The trouble with baking soda is that it enters the bloodstream and can cause fatal kidney damage if taken in large amounts day after day.

To avoid such trouble physicians usually recommend that their patient use one of the numerous aluminum or magnesium compounds that are on the market. These antacids do not enter the bloodstream but, like baking soda, give only short relief: the overactive stomach flushes them away in short order. Neither does it help to take the antacid in the sticky form that supposedly adheres to the stomach walls. The stomach gets rid of it fast and pain resumes. The temporary help obtainable from antacids marks them as useful, but only in conjunction with other care.

Great hope has been reposed from time to time in drugs that

inhibit the activities of the stomach, thereby limiting its secretions of acid. Among those used most extensively are atropine, Banthine and Probanthine. They are known as anticholinergic drugs, because they interfere with the activities of a strategic body chemical, acetylcholine. Through the action of acetylcholine, nerve impulses stimulate the stomach to secrete excessive acid. Interference by anticholinergic drugs reduces the secretions. Unfortunately, the anticholinergic drugs have a host of undesirable side effects, because they interfere with other bodily mechanisms dependent on acetylcholine, such as focusing of the eye, constriction of the pupil, salivation, sweating, and transmission of impulses in the spinal cord and in the nerves that govern the muscles. When given in safe amounts, so as to avoid some of the more incapacitating side effects, the anticholinergic drugs depress gastric activity a bit, but not enough to overcome the gastric consequences of troublesome life situations.

For example, Stewart Wolf gave a potent anticholinergic to a forty-two-year-old butcher who had once managed a large supermarket. The patient had lost the big job after an incident that exposed him to unjust accusations of embezzlement. His ulcer pains had begun at that time. After he took the anticholinergic drug, the man's stomach began to quiet down. When the action of the drug approached its predictable peak, Wolf said something that immediately restored the stomach to its previously overactive state: "Please explain why you lost your job as manager of the supermarket."

To inhibit the acid secretions of patients like the butcher, whose symptoms flare up in defiance of even the most potent medication, physicians resort to more drastic measures such as X-ray, surgery and freezing of the stomach. Freezing, the newest of these methods, has been getting the most publicity. During 1962 and 1963 the nation's press reported several times that patients were enjoying unprecedented freedom from ulcer pain after swallowing balloons through which alcohol circulated at sub-freezing temperatures. The procedure was described as safe, quick and simple: the

freeze destroyed acid-secreting cells in the stomach and supposedly had no other effect. When the cells grew back and pain resumed, the freezing could be repeated.

As happens so often, the publicity was premature and excessive. Later studies, about which I have seen no publicity, disclosed that freezing achieved only brief effects unless the temperature of the stomach was lowered to a dangerous level. Putting it another way, when the procedure chilled the stomach sufficiently to provide lasting effects, it sometimes caused grave damage.

It is barely conceivable, even if not especially likely, that some form of the freezing technique may ultimately be accepted as reliable for use against certain cases of peptic ulcer, but such a day is remote. Meanwhile, the publicity has encouraged manufacturers to promote freezing equipment among physicians who are not aware of the hazards. I think the entire episode might make a rewarding subject for study in schools of medicine, journalism and commerce.

An older technique, X-ray therapy, has been proved effective. It destroys the secretory cells, which is what it is supposed to do. Unfortunately, it is not safely repeated and, in any case, is unpopular now that people are so sensibly trying to avoid any radiation they can.

Which leaves us with surgery. Operations are unavoidable in emergencies such as duodenal obstruction (caused by the massed scar tissue of healed ulcers), or hemorrhage of an artery penetrated by ulcerous erosion, or full perforation of the intestinal wall. But thousands of ulcer operations are performed every year in circumstances short of emergency. Whether the wholesale, irrevocable excision of stomach tissue is always warranted in such circumstances is debatable. Increasing numbers of physicians no longer assume that surgery is an unavoidable last resort after diet and drugs have failed. Medical horizons are extended by the recognition that ulcer is a bodily response to life and can be treated by attending to the patient's way of life. Rather than hasten to sur-

gery, modern physicians see what they can do about persuading the patient's brain to stop agitating his gastric juices. With such an approach, surgery becomes more of a last resort than ever.

Ulcer surgery grew out of an operation introduced in Germany in 1881 by a surgeon named Wölfler. Operating for a cancerous obstruction, he demonstrated that the vulnerable duodenum and the exit of the stomach could be bypassed by connecting a portion of the small intestine to the body of the stomach. The operation, known as gastroenterostomy (literally, a mouth, *stoma,* between stomach, *gaster,* and intestines, *enteron*), was based on the mistaken theory that alkaline juice from the intestine must have free access to the stomach so that gastric acid may be neutralized. It was supposed that ulcer resulted when the alkaline intestinal juices were obstructed from the stomach and overacid gastric juice was thereby allowed to erode the duodenum.

Instead of curing ulcer, gastroenterostomy often brought about the formation of a new ulcer at the margin of the new stomach opening. It now became apparent to European physicians that surgery would not be successful unless it eliminated excessive acid secretions altogether. This thinking led to the development, again in Germany, of the gastrectomy—removal of the stomach, known as subtotal (partial) gastrectomy when, as usually happens in ulcer, less than the entire stomach is removed.

By the time partial removal of the stomach had begun to replace gastroenterostomy in European hospitals, American surgeons were taking up the older procedure with great enthusiasm. They strongly resisted the newer, more drastic operation. One of the most fascinating examples on record of scientific lag and placebo effect was displayed, altogether unconsciously, at a meeting of the American Surgical Society in 1930. The meeting was attended by surgeons whose names are imperishable in medicine: Frank Lahey, W. J. Mayo, Lord Moynihan. The atmosphere was one of self-congratulation over gastroenterostomy, the supposed cure for ulcer. Resentment was freely expressed against surgeons who preferred gastrectomy. A Dr. John Douglas read a paper reporting

that eighty-one percent of his patients who underwent gastroenterostomy showed no signs of renewed ulcer five years later. Less then two percent of them got ulcers at the margin of the new surgical connection between stomach and intestine. This stunning success was undoubtedly sufficient argument against the practice of removing half or more of an ulcer patient's stomach, thought the great Mayo, who rose and said, "How can a surgeon remove an innocent organ . . . when we have in gastroenterostomy such a uniformly successful procedure? I would never let a gastric resection [removal] be performed on a member of my family."

The equally great Lahey also lauded gastroenterostomy, declaring that it cut "to the very core of the disorder," which he erroneously described as the failure of duodenal juices to enter the stomach and neutralize the acid there.

The same 1930 volume of *Annals of Surgery* that reports all this contains a paper by Dr. A. A. Berg, an American who had come under the influence of the Europeans and knew the flaws of gastroenterostomy. He reported that ulcer had occurred at the margin of the new connection between stomach and intestine in one-third of the patients on whom he had performed the operation.

Nowadays, the kind of gastroenterostomy hailed by Mayo and Lahey and Crile and other illustrious surgeons of the twenties is out of favor. Marginal ulcers occur too frequently in its victims and, in any case, there is no basis for the belief that duodenal juices should be regurgitated into the stomach. How did the American surgeons manage to achieve even brief success with the procedure?

Stewart Wolf explains, "Surgery can have a pronounced placebo effect. Men like George Crile, Moynihan, Lahey and Mayo were world famous and their fame alone made them powerful placebo personalities. They could achieve with gastroenterostomy what other surgeons could never hope to achieve. The attention of such celebrated men engenders great confidence in the patient. It is not inconceivable that their mere presence at the bedside would have a lastingly salutary effect on the secretions of the stomach,

reducing acidity and eliminating ulcer symptoms for years."

In their efforts to devise a reliable operation for ulcer, surgeons have experimented with every conceivable gather and tuck. At the moment, subtotal gastrectomy is popular. If insufficient stomach is removed, however, hypersecretion of acid by the remaining stomach results in marginal ulcers similar to those that have been found in gastroenterostomy. But if too much stomach is taken out, digestion becomes a problem, weight is lost and anemia often results, the last because of the surgically-induced absence of the intrinsic factor described on page 17.

An even more unpleasant after-effect of gastrectomy is known as the "dumping syndrome." With the stomach's pyloric outlet valve gone, food no longer is meted out to the intestines but is dumped, passing too quickly from the stomach. The condition is a problem which, in about one gastrectomy patient out of three, causes nausea, vomiting, pallor, palpitations, a kind of dehydration, and a sensation not unlike that one gets when punched in the solar plexus.

An operation called vagotomy—separation of the vagus nerve —used to be unpopular but now is achieving deserved acceptance. When the nerve is severed, impulses from the brain no longer stimulate the stomach's muscular and secretory activities. The procedure therefore makes removal of large sections of the stomach unnecessary. It is usually combined with one or another form of gastroenterostomy or with pyloroplasty (widening of the stomach's pyloric outlet), so that food will pass at a more normal rate from the now sluggish stomach.

The only reason for the former unpopularity of vagotomy was that few surgeons could do it properly. The vagus nerve is hard to cut completely, and an incomplete vagotomy is as bad as no surgery whatever. Now that more surgeons can approach the problem with entire expertness, the results are far better.

The origin of the vagus nerve in the brain, where it is connected to tissues which store memories and formulate ideas, has heightened medical interest in the mental aspects of ulcer. Physicians

are impressed by the knowledge that an ulcer patient whose stomach, before vagotomy, could be made overactive by a discussion of troublesome situations, will get red in the face and hot under the collar after vagotomy, but his stomach will remain quiet.

Such manifestations of the brain's importance in ulcer, plus the failure of drugs and diet to hold the average ulcer patient safe against the cannonades of life, have aroused interest in new forms of treatment, short of surgery. The possibility that an understanding of the patient as a person may help his entire being as well as his stomach is taken more seriously, now that the sovereignty of the brain is more clearly perceived.

Psychological treatment is, after all, part of every attempt to cure disease. Unless the individual is carried in from the street as an emergency case, medical care is customarily rendered in an atmosphere of trust, consent and intellectual and emotional interchange. Whether the physician views the patient as a diseased cipher or as a whole person, whether he treats the stomach in isolation, by the numbers, or sees it in its living context or, in the style of some psychiatrists, concentrates entirely on the emotions, the interpretive and adaptive faculties of the patient are affected and, with them, his health. Thus, the work of the brusque big shot, who plainly would rather be on the golf course than serve his mandatory hours in the hospital's free clinic, differs only in degree from that of the more dedicated and no less expert general practitioner who spends his entire day off with his patient so that her baby will not strangle on the umbilical cord but will be born, rosy and whole, at precisely the safe moment. Both physicians affect the thinking, and therefore the health, of their patients; the one physician has a salutary effect on the interpretive and adaptive faculties of his patients and, to that extent, renders what has come to be known as psychotherapy.

As we have observed, the placebo effect of a sympathetic, knowing physician on an appropriately receptive patient may enable the patient to overcome peptic ulcer and live in comparative comfort for years on nothing more pertinent than a hoked-up diet and

antacid pills. This is all to the good. But more concerted treatment of the patient's reactions to life is often needed, raising the question of what kind of care to get and where to get it.

In 1952, Drs. Leonard Stein and Andrew C. Ivy asked two hundred and fifty-three medical psychoanalysts, members of the American Psychoanalytic Association, about their ulcer patients. Eight of every ten responded that they had never treated such a case. In all, Stein and Ivy located only seventeen ulcer cases treated by psychoanalysts. Seven of the cases had turned out quite well and ten could not be evaluated one way or another. In recent years psychoanalysts and other psychiatrists have developed greater interest in the treatment of so-called psychosomatic diseases, and non-psychiatric members of the profession have displayed greater willingness to refer appropriate cases to them. The published results of psychiatric treatment of ulcer remain too scanty, however, to satisfy many conventional physicians that the psychiatric therapy, and not a placebo effect, banishes the patient's disease.

In matters of this kind, as the reader of this book can probably figure out for himself by now, it is immensely difficult to decide where placebo effect leaves off and authentic psychotherapeutic results begin. Moreover, it is difficult to get terribly worked up about the distinction between the two, especially if the patient shows no sign of relapse five, ten or more years after psychiatric treatment. In a successful case, it is obvious that the psychotherapy, including more or less of a placebo effect, has been associated with recovery.

I have before me an article that Dr. Samuel Z. Orgel published in the March-April, 1958, issue of *Psychosomatic Medicine,* reporting successful psychoanalytic treatment of ten out of fifteen ulcer cases he had seen. Of the five failures, one had refused to continue treatment after an initial interview, another had quit after twenty-one visits, and a third after seven. Ten years later, each still had ulcer (one had undergone surgery), but reported that diet, alkalies and rest kept matters in endurable bounds. The two remaining failures visited the psychoanalyst five times a week,

fifty minutes per visit. One quit after one hundred and thirty-eight sessions, having been free of ulcer symptoms for a month. He remained well for about three years but his partial psychoanalysis came unstuck, or something. His ulcer recurred and perforated. Part of his stomach was removed. Twenty-three years later he still had symptoms but was able to minimize them with milk, diet and antacids. The fifth failure, a woman, stopped her psychoanalysis after four months (seventy-seven visits), her symptoms having vanished. During the next five years she hemorrhaged three times and finally had a partial gastrectomy. Fifteen years later she told Orgel that she had begun suffering from constant indigestion six months after the surgery, and had been miserable ever since.

Orgel's ten successes are revealing. Here are capsule reviews of a few:

1. This man's ulcer symptoms vanished after a year of analysis. He remained in treatment for a total of three-and-a-half-years (695 visits). "At the completion of his analysis there was a marked improvement in his marital life and sexual relationship. At work his diligence and application increased and there was a disappearance of a constant need for praise from his superior. There was also a marked improvement in his interpersonal relationships." Twenty-three years later he reported that his ulcer had never recurred, although he had suffered two business reverses and the loss of his wife.

2. After three years (592 analytic hours), this patient was discharged, and reported himself free of trouble twenty-two years later.

3. "S. G., seen in November, 1932, was a thirty-three-year-old married woman, childless, and working as an executive. For the past ten years she had been suffering daily with pain, gnawing . . . and occasional vomiting. . . . The symptoms had been partly controlled by diet, milk and alkalies. At the time of referral . . . her symptoms had intensified and a duodenal ulcer was diagnosed clinically and on x-ray." Discharged after three-and-a-half years (620

visits), she reported twenty years later that she had suffered no relapses.

Summarizing his experience with the ten patients, who had remained well from ten to twenty-two years, Orgel wrote with considerable reason, "I feel I am justified in believing that patients suffering from peptic ulcer and also a neurosis can be cured by the treatment of their neurosis."

Psychiatric treatment tries to fathom the reasons for the patient's difficulties in adjusting to life. On the theory that an emotionally mature individual adjusts more satisfactorily, psychoanalysts and other psychiatrists seek emotional factors which, implanted in the patient's unconscious mind during his early life, may account for his failure to mature on schedule. The patient is encouraged to talk freely about whatever pops into his mind. In time the patient often dredges up long-buried memories and feelings that help to explain his patterns of thought and behavior.

The process is more often lengthy and costly than not. This dampens the average person's eagerness for psychiatric care and explains to a great extent why most ulcer patients and their physicians prefer to rely on diet, drugs and surgery. The appeal of psychiatry to non-psychiatric doctors is additionally limited by inability to lay hands on published psychiatric reports that refer to more than a handful of cases at a time. The conventional scientific discipline of the controlled, large-scale experiment is rare in psychiatry, largely because the nature of the psychiatric process makes such experimentation extraordinarily difficult. But the paucity of reports suggests that the lads are reporting only what they feel like reporting, which causes a certain amount of unease elsewhere in the profession. The unease is compounded, furthermore, by incessant and frequently unintelligible debate among psychiatrists about terminology, treatment technique, and the criteria of therapeutic success. Whether all this seems fair to psychiatry or not, the conclusion is inescapable that the right psychiatrist, given the right patient and the right amount of time, can bring about the permanent disappearance of a peptic ulcer.

When the specialty outgrows its youth, as it must, its abilities in this connection will become more uniform and, therefore, more widely appreciated.

Attempting to modify the ulcer patient's style of life and, with it, his gastric behavior, the general physician or internist, like the psychiatrist, sometimes tries to uncover and clarify childhood conflicts, to show how these may have conditioned the patient's subsequent performance. Non-psychiatric doctor-patient discussions more frequently concentrate on present difficulties, however. A recent advertisement by the Metropolitan Life Insurance Company, illustrated with a drawing of a man relaxing in a hammock, was labeled, "Man Most Likely to Succeed . . . in getting over a stomach ulcer." The body of the advertisement quoted a doctor as telling his patient to "slow down and quit worrying. . . . Don't bottle worries up. Talk them over with someone you trust, or leave them awhile. . . ." The insurance company emphasized that relief of ulcer depends on "mental or emotional discipline."

The implication that an ulcer patient can be helped by being told to relax is outrageous to anyone who fancies that most human beings are governed by unconscious neuroses approachable only after the most laborious and protracted excavation of the psyche. The facts are, of course, that many people cannot easily govern their behavior and some become so deranged that they have to be carted away in camisoles. But significant numbers of other people, including certain ulcer sufferers, actually can be straightened out by light advice such as that contained in the insurance advertisement. Your own family physician can undoubtedly recite scores of examples.

One internist describes another useful form of light treatment: "We often get results just by providing a sympathetic ear for the patient, along with occasional reassurance, encouragement and counseling. It is almost the universal experience of physicians that patients do better when an effort is made to be understanding and, in a way, supporting. It is amazing how many people go through

life without anyone to talk to, and how gratefully they respond to an opportunity to confide. For many ulcer patients, and for any number of reasons, it often is most practical to set up a course of treatment that combines simple psychotherapy of this kind with frequent feedings and antacid drugs. Some people do well with such care, whereas more searching treatment might dislocate their lives to an unmanageable extent."

At the very least, ulcer patients should learn that nervous impulses from the interpretive and adaptive areas of the brain cause overactive gastric secretions and duodenal pain. Knowledge of the process enables them to develop perspective which leads, in turn, to a kind of endurance. Unfortunately, many ulcer patients do not absorb this lesson readily, being unaccustomed to associating themselves with anything so "weak" as susceptibility to the words and whims of others. At the first inevitable relapse, some of them tend to regard their course of treatment as a failure, and they run off to something else.

It therefore is important that the patient learn as quickly as possible about the mechanisms of ulcer and learn, however superficially at first, that some of his troubles may derive from exaggerated reactions to perfectly normal—or at least tolerable—events and circumstances.

The *British Medical Journal* editorialized twenty years ago: ". . . until we can learn some new secret of Nature, we must be content to try to teach the patient how best to live at peace with his ulcer and to do this he must probably learn how to live at peace with himself."

During the years since that editorial was published, a few relevant secrets of nature have been unveiled. It no longer is necessary to assume that every ulcer patient need learn to live with the lesion. Those who really learn *how* to live can look forward to permanent freedom from symptoms. To achieve this, they change their ways of life.

In the last chapter we met an attorney whose ulcer, like so many others, was directly related to the frustrations of an inadequately

rewarding job. The refusal of his anti-Semitic employers to give him the partnership he deserved, and his inability to break free of the stifling situation, were at the bottom of every ulcerous attack. His physician, who saw all this clearly enough, could not expect to convince the patient of it by means of "pull yourself together" pep talks or by playing the Delphic oracle. Here was a case in which the patient had to make major changes in his way of life if he were ever to quit suffering.

The first phase was one of rest, reassurance, elementary education and frequent feeding in the protective atmosphere of the hospital. The quick disappearance of symptoms made the patient receptive to knowledge about the situational factors in ulcer. He took part in laboratory experiments in which his gastric activity was recorded on graph paper. He saw in the tracings how his stomach boiled over at the slightest mention of his professional difficulties.

After he left the hospital and returned to the law office, he had abundant opportunity further to verify the effect on his duodenum of the slights he suffered in his job. Meanwhile, his symptoms were controlled fairly well by keeping his stomach at work on food, milk and antacids and by regular consultation with his physician, who provided the encouragement and, above all, the sounding board he needed. The patient learned to anticipate his symptoms and to place them in something like realistic focus. He knew that they were less dangerous than they had been before he entered scientific treatment. He was now better able to take them in stride. At the same time, he knew that they could hardly be expected to disappear altogether until he either adjusted to his employers by adopting their anti-Semitism, or adjusted to himself by leaving the law firm flat.

Realization that he would have to overhaul his life was not implanted in the lawyer's mind by the physician. Rather, the physician created the conditions in which the patient could see the truth for himself. He achieved his new level of understanding in less than three months. A few weeks later, after considerable

vacillation and a few ulcer attacks, which did more good than harm because they helped reemphasize the need for a change, the patient took a tentative new step toward health. He became active in the affairs of the Jewish community, which he had avoided in the past because of his anxiety to appease the Aryan fastidiousness of his employers.

His subsequent progress was automatic, inasmuch as he was an attorney of great talent and was no longer under wraps. A congressman he met invited him to become staff counsel to an important Washington committee. He bade his employers farewell and has since enjoyed a most satisfactory career of no little prominence. His physician believes he still gets occasional duodenal twinges but has no serious or persistent trouble, having developed so much insight into the matter that he either attends to it with milk and forgets it, or simply takes stock, determines the source of the trouble, and copes with it.

Ulcer frequently is related to difficult family situations and cannot be controlled until the physician befriends the key disputants and, in Stewart Wolf's words, "cleans the smudge off the picture," so that each member of the group can see the other realistically.

A fifty-dollar-a-week shoe salesman was brought to the hospital in a state of total incapacitation. He was piteously emaciated, in constant pain, was vomiting repeatedly and bleeding from the rectum. An ulcerous obstruction of the duodenum was diagnosed. Surgery was on the agenda.

Careful physicians do not rush to operate on a duodenal obstruction, however, unless the situation is unavoidably emergent. What seems at first to be an obstruction caused by the intrusion on the intestinal canal of heavy scar tissue may prove, under closer examination, to be a simple swelling of the duodenal tissues, plus muscle spasm in the vicinity of an acutely inflamed ulcer. Whenever possible, physicians place such a patient under observation, feeding him by vein and continually drawing the fluid from the stomach so that the swelling around the inflamed ulcer may have

a chance to subside. After a few days, x-ray examination may show less evidence of obstruction. Surgery can often be cancelled.

In the case of the prostrate shoe salesman, the physician combined intravenous feeding and withdrawal of gastric juices with several long chats, which revealed that the poor fellow's life was a horror. When x-rays showed no real obstruction and hence no urgent need for surgery, the physician continued with the chats and was pleased to note a remission of all symptoms in a week.

The man was the runt of his litter, the sole member of his intellectual family who had proved unequal to higher education. His brothers were rampant successes but he had not been able to make the grade as an engineering student. He was a gentle, sweet soul, far more perceptive and intelligent than he realized. He had attracted the romantic attention of a young girl whose father was a successful merchant, a domineering type who had decided that his little girl should marry someone refined. The patient was as refined as you can get and qualified for the girl's hand.

Unfortunately, she had acquired some of the values of her father. Her ambitions were mainly material. Happiness was synonymous with acquisition. Yet the patient was not acquisitive. He was a confirmed financial failure and had no hope of ever being anything else. It took little time for him to realize that he and his new bride were getting along like fire and TNT. She had an enchanting way of referring to "your lousy fifty bucks a week." He began getting ulcer symptoms and, after a dozen years of matrimonial and duodenal hell, arrived in the hospital on his back.

After two weeks of hospitalization, during which he went through an elementary educative process similar to that of the unfortunate lawyer discussed earlier, the shoe salesman was able to go home under his own power. He now understood his trouble quite accurately, realizing that his symptoms arose in humiliating circumstances, and that his wife was humiliator-in-chief. But he had no taste for abandoning her. He actually loved her, even though he saw no hope of reforming her attitude. In sum, it was only a matter of days before his ulcer flared again.

The physician continued to see the man frequently and also persuaded the wife to visit on a regular basis. He managed to maintain the husband in a state of health far better than the ruination in which he had first seen him. The physician was the first person who had ever really appreciated the man, and the appreciation had a pronounced palliative effect. Meanwhile, the wife proved quite different than either she or her husband thought she was. It turned out that she actually had married the shoe salesman because she was enormously attracted to him: his was the sensitivity, the awareness of others, the contemplativeness which had been so odiously lacking in her callous, noisy father—qualities which she, as her father's child, had been conditioned to exploit rather than appreciate. At bottom, it seemed, she found her father repugnant but, with the inverse pattern familiar in the behavior of troubled people, she had used her mild husband, rather than Papa, as a convenient target for the resentments that stifled her.

The physician and the wife became friends, and the next months were spent in efforts to keep her off her husband's neck, trying to get her to see for herself that she admired his qualities, and helping her to understand her peculiarly divided attitude toward her father. The shoe salesman benefitted much from the accompanying diminution in wifely harangues and from his own continuing sessions with the physician. All of a sudden he stopped being a shoe salesman and dared to get a job as a draftsman. He had talent for the work and, in time, achieved relative prosperity and greater self-esteem.

His treatment continued at intervals for years, largely because of problems he had with a daughter (who will be discussed in a later chapter on the treatment of obesity). His progress was delayed by occasional ulcerous setbacks, but his wife gave up sneering at his salary and came, at last, to enjoy him for what he was. The change in her helped the patient as much as the change in his career did. The case is included here precisely because it was not one of the lightning-fast, outright cures that so often occur. It

demonstrates, nevertheless, that significant improvement can begin almost at once and can make a previously unbearable life more satisfactory.

Even if the freezing technique or some pharmaceutical method of inhibiting acid secretion ultimately proves effective in controlling ulcer, the treatment of the whole patient will continue as fundamental to the establishment and maintenance of health. As I hope I have shown, the treatment of ulcer can no longer be looked upon as a struggle between the resourcefulness of medicine and the evils of disease, with the patient seen more as a battleground than as a person. The treatment of ulcer must now be recognized as an alliance between medicine and the natural proclivity of the body to heal and flourish. In that light, the adversary is not so much the disease as the conditions which encourage the onset and persistence of the disease.

Chapter 7

Cancer of the Stomach

About twenty-five thousand new cases of stomach cancer occur each year in the United States. There is no known way of preventing the disease and, among those who contract it, less than one patient in ten is treated successfully. In view of the ghastly facts of this and other cancerous diseases it takes a certain amount of gall to describe the situation as hopeful. But it is. Individuals who get stomach cancer can greatly enlarge their chances of survival by seeking medical attention as soon as the first symptoms arise. That is hopeful. The long-range outlook is immeasurably more hopeful: most medical scientists expect that the nature of many cancerous diseases will be discovered within the next ten or fifteen years, if not sooner, and that the discoveries will mean prevention or cure for millions.

In the meantime, cancer of the stomach remains one of the deadliest diseases of man. The only treatment that works is surgery, a step often taken too late to help. Surgical removal of part or all (usually all) of the cancerous stomach is most successful during the earliest stages of the disease when, unfortunately, the victim may regard his symptoms as too negligible to warrant

medical attention and when, in any case, cancer is sometimes exceedingly difficult to diagnose. Later, after the cancer is identified as the cause of the patient's digestive troubles, the disease may have spread beyond the stomach and beyond control.

The other afflictions reviewed in this book are penalties of human error. They can be avoided, controlled or cured by sensible living and intelligent medical care. Stomach cancer is different, or seems to be. If it is a disease of human error, evidence to that effect is discouragingly absent.

This generally unpleasant chapter is presented to the reader for three reasons: (1) the book would be incomplete without a summary of what little is known about stomach cancer, (2) the reader who learns something of the disease is likely to rush to a physician with his own relevant symptoms, if any, and (3) if the reader's symptoms are not relevant to cancer of the stomach he will know it at last and will stop plaguing himself with baseless fears.

Cancers are rapid growths of disordered cells which sometimes appear as lumps or enlargements. Masses of that kind often outgrow their blood supply, so that newly formed cells die of undernourishment. When this occurs on a surface such as the skin or the stomach lining, an ulceration appears. In deeper tissues the dead cells leave a cavity resembling a cyst or abscess.

Cancer cells tend not only to mass in one place but to break away into the bloodstream or the lymphatic channels, traveling to distant parts of the body where they establish metastases, or new colonies. The cells of a metastasis display characteristics of the organ in which the cancer originated.

Although cancerous growths endanger life by crowding and obstructing vital organs, relatively few people die that way. Masses can usually be removed and the physical obstructions relieved. A far more difficult problem is the chemical effects that cancers have on the rest of the body. In some subtle way they interfere with the nourishment of the body, depressing the functions of organs located far from any cells recognizable as cancerous.

For example, a cancer growing in some remote part of the body may produce a profound anemia, its chemistry somehow slowing the manufacture of red blood corpuscles in the bone marrow and shortening the normal life of newly manufactured blood cells. Or a remote cancer may interfere with the operation of cells in the brain, spinal cord and muscles. Thus, a variety of nerve and muscle disorders are attributable to cancers, even though no cancer is discernible in the nervous or muscular tissue.

Although nobody yet knows how a cancer can kill without spreading through the body, two theories are favored. One is that the rapidly growing cancer cells are so avid for essential chemicals, especially certain enzymes, that they deprive normal tissue of nourishment. A second theory is that cancers emit substances that poison normal tissue.

Because phenomena of this kind remain mysterious and entirely beyond predictable control, the best possibility of cure for most cancers lies in prompt removal of cancerous cells. Where stomach cancer is concerned, surgery is the only cure, which makes early diagnosis incalculably important.

It is likely that certain people who die of stomach cancer would live longer if they realized that the disease *is not necessarily painful.* Because their new but persistent case of "indigestion" is not painful, they assume that it is of no importance and they neglect to get a proper medical examination. But the facts are that many stomach cancer patients never have pain. The symptoms of the disease are usually those of an underfunctioning stomach—bloating, belching, a feeling of fullness, sometimes painful, sometimes not.

As observed in earlier chapters, the underfunctioning stomach behaves as if it has been poisoned. The muscular walls go lax and the organ hangs loose like a bag instead of taking the shape of its contents. Less acid juice than normal is secreted and food takes a long time to pass to the intestines. Why such a state of affairs should prevail in a cancerous stomach is not known, nor is it known why the secretory glands of such a stomach degenerate

until they cannot produce gastric juice even when stimulated by the strongest drugs.

Medical scientists have been fascinated for years by the degeneration of non-cancerous glands in a cancerous stomach. Does the cancer cause the degeneration of those glands or do cancers grow more readily in stomachs that have degenerated? It is likely that both things happen. Beyond doubt, failure of the stomach to secrete acid often begins many years before the appearance of a stomach cancer. The phenomenon is especially noticeable in patients with pernicious anemia, a disease characterized by the failure of gastric glands to secrete hydrochloric acid. Sufferers from pernicious anemia are more than ordinarily susceptible to stomach cancer, although many never get it.

Because of the association between stomach cancer and failure of the organ to secrete acid, tests for acid are sometimes used as rough screening procedures in cancer detection; but only rough, since innumerable underfunctioning stomachs are not cancerous and never become cancerous.

One of the central difficulties in diagnosing stomach cancer is the ease with which a benign stomach ulcer may be mistaken for a cancer. X-ray pictures are not infallible in differentiating between a benign gastric ulcer and the lesion of a cancer. This is why persons with benign stomach ulcer often undergo removal of the stomach.

(No such confusion exists in cases of duodenal ulcer. That disease is associated with overactive not underactive stomachs, and cancer of the duodenum is virtually unknown.)

The theory that benign stomach ulcers should be removed surgically, along with the rest of the stomach, rested for years on the belief that any gastric ulcer was likely to become cancerous sooner or later. This belief no longer is widely supported. Present statistics indicate that only one stomach ulcer in ten is cancerous, and that about half the cancerous ones can be diagnosed by precise, modern methods short of drastic surgery. This leaves about five percent of gastric ulcers that unexpectedly turn out to be

cancer. They probably were cancerous all along. The Lahey Clinic followed about one hundred stomach ulcer patients for seventeen years without performing surgery on them. Ultimately, less than five percent of these patients died of stomach cancer or some unknown cause. At the Mayo Clinic, on the other hand, the stomachs of about a hundred patients were removed as soon as stomach ulcer was diagnosed. *Cancer was found in approximately five percent.* Since there was no greater incidence of stomach cancer among stomachs allowed to remain intact for seventeen years, it would appear that cancer rarely develops in a benign gastric ulcer. Because of this, many physicians are now reluctant to recommend the removal of the stomach of a gastric ulcer patient.

Reluctance to undertake such surgery becomes even more understandable when one considers the hazards of the operation. Depending on the quality of the hospital and the ability of the surgeon, the death rate after surgical removal of the stomach varies between one and one-half and forty percent. In most grade A hospitals, however, less than five percent of such patients die.

Since not much more than one cancer in five is cured by removal of the stomach, it can be seen that the statistics argue rather powerfully against the operation *unless cancer has been diagnosed in advance.* If the operation is undertaken on a guess, its risks counterbalance its benefits. Putting the statistics another way: of every hundred patients with stomach ulcer who refuse to have their stomachs removed, five eventually will die from stomach cancer. But, of every hundred patients with gastric ulcer who consent to the operation, about five will die as a consequence of the surgery, and about ninety will have lost their stomachs for insufficient reason, complicating and perhaps shortening their lives.

It should be emphasized that relatively few stomach cancers present themselves in the form of gastric ulcers, thereby involving the torturous problem of deciding whether the ulceration is benign or cancerous. In the great majority of cases, with ulcer not present, diagnosis is easier. On an empty stomach the patient swallows a suspension of barium sulfate, a metallic salt that ob-

structs the passage of x-rays through the body and casts a shadow on x-ray film. Cancer manifests itself on the x-ray picture by a failure of some portion of the stomach lining to fill smoothly with barium, thus presenting an indistinct outline. Also, there often is a stiffness of the stomach wall, observable when the fluoroscopist presses on the abdomen to move the barium about in the patient's stomach.

About forty years ago a new technique was devised for direct examination of the stomach lining with lenses attached to a tube thrust through the mouth and down the gullet. This instrument, the gastroscope, affords an excellent view of much of the stomach lining and enables a skilled instrumentalist to recognize a variety of gastric disturbances. In a localized condition such as cancer, however, the value of gastroscopy is seriously limited: parts of the organ are inaccessible to the instrument and, in any circumstances, positive differentiation of a benign from a malignant gastric ulcer is impossible without microscopic examination of the diseased tissue.

An attempt to obtain microscopic evidence without surgery was made by the late Dr. George Papanicolaou of Cornell, who learned to detect cancer by examining the cellular debris of various bodily secretions. His famous "Pap smear" was a brilliant advance in detection of cancer of the cervix and uterus, early diagnosis of which now spares the lives of thousands of women who, in earlier years, would have died. Unfortunately, the "Pap smear" technique has not yet been adapted adequately to stomach cancer. The main reason is that the gastric juice has its usual digestive effect, altering the cellular debris of the stomach lining so as to leave even cancer cells unrecognizable.

For years there has been a vigorous search for a testing procedure that might detect gastric cancer in specimens of blood or urine. Such studies have yielded evidence that in cancer as well as other illnesses the blood proteins undergo alteration. So far, however, none of the tests based on this principle has proved sufficiently reliable to serve as a cancer screening technique. When

the nature of the alteration in blood proteins has been defined more precisely, tests may allow for mass gastric-cancer surveys similar to those now being conducted for cervical and uterine cancer.

Perhaps the simplest and least expensive test capable of arousing sufficient suspicion of cancer to warrant further investigation of the patient's case is a chemical test for small amounts of blood in the feces. Most physicians perform the test in routine physical examinations. There are, of course, many harmless reasons for tiny traces of blood in the stool—such as eating rare steak—but it is also true that most cancers of the digestive tract ooze at least a little blood each day. The procedure does not identify cancer, therefore, but it does raise suspicions so that cancer, if present, may be detected early enough to be cured by surgery.

Talk about science's quest for the cause of cancer is enough to make the modern medical scientist blow a gasket. The common superstition that every disease has a specific cause for which a specific cure will be found is even less intelligent in cancer than in other ailments. Many scientists suspect, for example, that "cancer" is an umbrella-type concept, comparable to "head cold" in that it refers to a host of different afflictions. Thus, few persons who favor the virus theory of cancer are trying to persuade anyone that viruses cause all cancers, or even that a virus causes any cancer. Instead, they seek to determine whether viruses or virus-like chemicals are relevant to the development of cancer and, if so, to what kind of cancers and in what circumstances.

And the next question is, "What can we do to alter these circumstances so as to prevent or minimize the disease?"

Not much is known about the circumstances of cancer. It has been shown that skin cancers occur among people who work outdoors in sunny climates, and are more prevalent in equatorial regions than in areas where the sun is less hot. It also is known that mouth cancers occur among fishermen who use their mouths to help manipulate nets covered with coal tar; lung cancer occurs among cigarette smokers; cancers of various kinds occur among

persons overexposed to x-rays and nuclear radiation. It also is known that the first sign of skin, mouth or genito-urinary cancer is loss of vitality in the affected tissue, marked more often than not by the appearance of a small atrophic spot. Cancer of the stomach also is preceded by atrophy—atrophic gastritis, the failure of the stomach's secretory mechanisms to function. Recent investigations have shown metaplasia—non-cancerous changes in the nature of tissue—in areas of the stomach where cancers later arise.

In trying to understand gastric cancer, therefore, medical scientists are as concerned about the genesis of pre-cancerous tissue changes, such as atrophic gastritis, as they are about the genesis of the cancer. What damages the stomach tissues to bring about this loss of vitality? The most plausible answer is misuse, or disuse, which amounts to the same thing. Thus atrophy and cancer tend to develop in undescended testicles and in the breasts of aged virgins and of women who never suckled their infants.

But what would be the equivalent misuse or disuse of a stomach? Nobody knows. Dr. Niels P. Dungal, an Icelandic pathologist, has recently been pursuing a theory that has dietary implications. He suggests that people who eat a lot of starch and rely on smoked fish for much of their scant protein rations develop an inordinate amount of stomach cancer. It is possible that the dietary imbalance renders the gastric tissues of such people susceptible to the carcinogenic (cancer-inducing) chemicals deposited in the meat of fish by the smoking process.

Another theory is, of course, the virus theory. Tissue invaded by a virus changes its character as surely as if it had been misused, or unused. Stewart Wolf remarks, "It is popular to try to attribute cancer to viruses but it may turn out that anything that tends to make a cell degenerate may be reacted to by the body with the reckless overgrowth of cancer." Viruses may be merely one of several precipitating factors.

There is suggestive evidence that the nervous system is in the thick of the problem, as usual. A healthy cell sends the central nervous system information to the effect that all is well and that

more healthy cells should be manufactured. An unhealthy cell, such as a cancer cell, may send a different message, or may send no message at all. Why, then, does the nervous system proceed to collaborate in the manufacture of additional unhealthy cells, and at an unnaturally rapid rate?

The solution to that riddle is beyond present reach and no available guesses have sufficient standing to command the reader's allegiance. Yet it will be incredibly strange if cancers turn out to be governed by biological laws much different from those that account for other diseases. Consider, for example, the cold sore, or fever blister. It is a temporary failure of healthy cell growth caused, as the saying goes, by a virus. After assailing the lip for a few days it disappears, but the virus apparently lingers in the system and the sore recurs at odd intervals for years. Under close investigation, however, the intervals between derangements of lip tissue seem less odd: cold sores reappear when the individual suffers the stress of an illness or a change in climate or a disquieting event in his life.

A more sensational but perhaps equally relevant example of relations between the adaptive faculties and tissue derangement is offered by Periplaneta americana, the cockroach. They prowl in the dark and rest when it is light. Dr. Janet E. Harker of Cambridge University found that when she put them into a setting where darkness occurred at times of day that had previously brought light, and light occurred when it should have been dark, the creatures spent two or three days walking in the light and resting in the dark before they began to adapt to the new environment and reestablished their previous pattern of activity in darkness and idleness in light. She found the ganglion (nerve grouping) that governs such adjustment and discovered that she could change the individual cockroach's behavior by removing its own ganglion and transplanting one that had belonged to another roach. Thus, a roach that had been foraging at noon could be made to forage at midnight.

What do you suppose happened when Dr. Harker implanted

noon-active ganglia into midnight-active roaches without removing their own ganglia? The creatures, affected now by the diametrically opposed promptings of two ganglia, developed tumors.

It is quite a stretch from the tumors of artificially discombobulated cockroaches to the cancers of man. Yet, if cancer turns out to be unrelated to the interpretive and adaptive facilities of the brain it will be the first such disease on record. Cancer, whatever else it may be, is not all luck, or fate, any more than other diseases are. Cancer is *not* completely divorced from the business of living, any more than other diseases are. It is entirely safe to predict that, whatever the "cause" of cancer turns out to be, the individual will find that his own way of life is a major determinant of his susceptibility to the disease.

In a real sense, the individual can already do more about cancer than trust to luck. From the point of view of public health and individual longevity, the most sensible advice comes from the American Cancer Society, which recommends medical examinations to anyone who has the following symptoms for longer than two weeks:

Unusual bleeding or discharge.
A lump or thickening.
A sore that does not heal.
Change in bowel or bladder habits.
Hoarseness or cough.
Indigestion or difficulty in swallowing.
Change in a wart or mole.

Chapter 8

The Abused Bowel

Some physicians think that intestinal regularity, as the laxative advertisers call it, is no longer a major obsession of the American people. They say that comparatively few patients complain nowadays of constipation, a trivial condition that used to cause grievous mortification and alarm.

Nevertheless, physic manufacturers set new sales records every year. We now gobble up their merchandise at an annual rate verging on $165 million. The statistic reflects no significant decline in the national yen to be as regular as a clock. Quite the contrary. If physicians are now treating fewer cases of constipation, television announcers evidently are treating more. This is too bad, because physicians can cure the ailment quite easily, but laxatives only worsen and perpetuate it.

I think most doctors agree with the modern opinion that constipation is much ado about nothing. Few will dispute the statement that at least nine of every ten people who regard themselves as dangerously irregular can obtain effective, permanent relief simply by unlearning certain superstitions and learning certain facts.

The colon (or large intestine, or lower intestine, or large bowel), where the final processes of digestion occur prior to elimination, is as responsive as the stomach to the interpretive-adaptive computations of the brain. In some situations it turns pale and flaccid, in others red and convulsive. Inasmuch as the colon (a) stores alimentary residue long enough to extract water, minerals and a vitamin or two from it and (b) propels the remainder to the rectum, one can see how colonic overactivity or underactivity accounts for wide variations in the frequency and quality of stools.

For the moment the only other thing that needs to be known about the colon is its geography: it is a kind of festoon over the small intestine, joining it in the lower belly, traveling upward on the right side (where it is known as the ascending, or right colon), across to the left side below the stomach (where it is called the transverse colon), and then down the left side to its junction with the rectum (where it is the left, or descending colon).

When someone complains of constipation the physician has to ask questions to discover what is meant. Several different conditions qualify for the label, the most frequent being a mental state that might well be called "televisionosis," or the advertising syndrome. The patient is not really constipated but has been drilled by the prevailing culture into believing that his movements are dangerously infrequent. He feels below par, fancying himself the victim of autointoxication, a mythical condition that is supposed to occur when "poisonous wastes" enter the bloodstream from the colon. He is afraid of the "poisonous wastes." He wants to go profusely to stool once a day, like the leering hero of the advertisement. He wants to feel like happy days are here again. In sum, he has been persuaded that regularity, by which the physic peddlers mean frequency, has something to do with health.

It doesn't.

In the first place, the colon absorbs only water and certain chemicals from the fecal stream. It does not absorb poisons from the normal intestinal contents. If it did, life could not exist in recognizable form. To nail the matter down, if the colon absorbed

even a little poison when bowel movements were infrequent, the mere maneuver of taking a laxative and completing a movement would be of no avail. A bowel movement purges the bowels, but can hardly purge the allegedly poisoned bloodstream. Nor, while we are at it, can a bowel movement "break a fever." Nor, before we forget, does the ritual of taking a laxative "to get a good cleaning out" ever make sense, except emotionally.

People who worry about being poisoned by their own stools often pay extraordinary attention to the color, shape and aroma thereof. This is usually a waste of time, since normal people produce stools of wide variety, especially if their dietary habits are varied. Such variety in the appearance of fecal matter is no cause for alarm.

Nevertheless, the reader should know that a grayish, pale stool often reflects a milk diet; a black stool is commonly encountered when the individual has been taking extra iron but may also be an important sign of the presence of blood, particularly if the stool has a sticky, tarry appearance; a green stool usually means that bile has passed from the upper intestine to the rectum at a relatively rapid rate, as in diarrhea, because bile that remains in the intestinal tract for a while turns brown and gives the feces that color; buff- or clay-colored stools signify the absence of bile and are found when the bile ducts are obstructed by gallstones or some other factor; red stools are usually a result of beet juice or bleeding.

The shape of the stools depends chiefly on the amount of dehydration that takes place in the colon, although an extremely narrow stool may be encountered when tumors or other constrictions of the lower bowel reduce its calibre. Foamy stools which float and have more than the ordinary odor suggest that pancreatic secretions are either deficient or are not reaching the intestinal canal, or that fat and other foodstuffs are not being absorbed properly in the small intestine.

The doped, hazy, bilious, headache-y feeling that some constipated individuals attribute to the presence of "poisonous wastes"

is a result of brainwashing. As long ago as 1924, the wise and witty Dr. Walter C. Alvarez showed that such persons develop the same symptoms when their rectums are stuffed with cotton. The symptoms are an exaggerated reaction to a feeling of rectal fullness that the sufferer interprets as dangerous because he has been told to.

Remarking on the rapidity with which the symptoms vanish after a bowel movement, Alvarez writes in his *An Introduction to Gastro-Enterology* (Paul B. Hoeber, Inc., New York, 1948) that, if poisons were involved, relief would not come until the next day, when the concentration of poisons in the blood would have diminished. "To use a homely simile," he says, "one does not sober a drunken man by taking his flask of whiskey away from him."

Alvarez's elegant use of cotton batting to demolish the autointoxication theory has been duplicated by other experimenters who, distending the colons of volunteers by artificial means, produced dramatic decreases in intellectual capacity and vision, along with nausea, loss of appetite, emotional depression, flushing, restlessness and sweating—the same symptoms that bother certain sufferers from constipation. Persons who fail to respond to the experimentation with such melancholy symptoms are the sort who, in Alvarez's words, "remain for considerable intervals of time unaware of the fact that the rectum is filled with feces. And even when they become conscious of a fullness . . . they do not always become distressed over it. [Only an] occasional person . . . reacts so strongly with headache and feelings of intoxication that he cannot rest until the bowel is emptied. . . ."

The cure is indifference to "intestinal irregularity." Indifference becomes possible as soon as the sufferer realizes, after all those years, that he is in no danger from "poisonous wastes." And indifference becomes absolutely unavoidable when the next truth dawns: there is no such thing as universally normal regularity of bowel movements. The man who proceeds to stool every morning after breakfast is no healthier and no more normal than the man who makes the visit only twice a week. The second man gets into

difficulty, however, when his infrequency alarms him into taking purgatives, or straining at stool, or both.

"Normality is not a real thing," says a modern medical scientist. "It is a man-made concept that means 'typical' or 'representative.' It does not imply, or should not imply, that the atypical or unusual is necessarily diseased. For example, some people are short, some are tall, some are in between, and some are robust and some are lean and some have big feet and some have small, but such deviations from the ideal 'norm' do not indicate that anything is wrong. The same is true of defecation. It is normal to go once a day. It is just as normal to go twice a day or once a week. Alvarez found people who had no movements for weeks but suffered no ill effects of any kind."

Modern physicians check the bowel performance of bed patients only because regular elimination often means a great deal to the patient's morale. If the individual associates regularity with good health, and the altered diet and other strange routines of confinement result in a missed movement or two, recovery may actually be delayed by the patient's alarm over his "constipation." By the same token, a mild cathartic may facilitate recovery (even from a broken leg), by restoring the cherished function.

In treating heart patients, physicians have more urgent reasons for making sure that bowel movements are regular and uncomplicated. Constipation may distend the abdomen and raise the diaphragm sufficiently to press upon the weakened heart and overburden it. Also, strenuous effort at stool is not desirable for someone whose heart needs comparative ease.

Although the physician understands that constipation is seldom of any consequence, he always checks to make sure that his "tied-up" patient is not suffering from an intestinal obstruction, such as an overgrowth of some kind, or a foreign object, or a twist in the bowel, or a vagrant gallstone lodged in the small intestines, or a strangulated hernia. Once he has satisfied himself that no obstruction exists, his attitude toward the constipation is governed to a considerable degree by the patient's own attitude. If the patient is at all receptive, the physician will set forth encourag-

ing facts about autointoxication and regularity and will point out that the best treatment for occasional constipation is to ignore it. As soon as sufficient residue collects in the healthy colon, it is propelled to the rectum for evacuation. If the tensions of life affect the individual in such a way as to defer the process for a few days once in a while, no harm results. The thing to do is relax, especially since overconcern about regularity can itself complicate the problem—just as fear of not sleeping makes matters worse for the insomniac.

Which brings us to cathartics. Some people boast of their blissful regularity, crediting their glowing health to the glass of hot lemonade they drink before breakfast, or the cup of coffee and cigarette without which the regularity turns irregular. But neither hot water, lemon, coffee nor tobacco contains properties uniquely relevant to defecation. The phenomenon of a bowel movement provoked by such means is a ritual, a conditioned reflex, a placebo effect. Someone who wanted to be fancy about it could obtain the same result by doing yoga exercises after breakfast, or by singing "Yankee Doodle." Most of us function well without glasses of hot water merely by performing our own primitive ceremony of closing the bathroom door and reading a newspaper. Governed as they are by the computer mechanisms of the brain, the colon and rectum acquire habit patterns, many of them so ritualistic that any departure from the accustomed routine—such as no coffee for breakfast—throws the organs out of kilter for a while, having baffled the brain.

That is one of the things wrong with laxatives. The system becomes addicted to the oils or stimulating chemicals and refuses after a while to function without their help. The victim has now developed a lazy, underfunctioning colon and may remain the laxative huckster's slave for life unless he is willing to be constipated for the few days it takes to break the charm and resume normal functioning. Habits can be broken, obviously, and new ones formed. Almost anyone can wean himself from laxatives, usually just by deciding to.

A review of the physical damage achievable with laxatives may

inspire the constipated to reform. Laxatives with mineral oil in them absorb Vitamins A and D from the intestines and purge those essential chemicals from the body. Anyone insane enough to take large quantities of oil every day for a few weeks could lubricate himself into a state of grave malnutrition. The laxatives that have mineral salts in them are no better, drawing essential water and chemicals from the body and causing a dehydrated condition similar to that of dysentery. Laxatives containing cascara or phenolphthalein work by chemical irritation of the colon, exciting it into temporary overactivity and raising absolute hob if the user's colon happens to be sensitive to begin with. For example, some forms of colitis (irritable colon) alternate the symptoms of constipation with those of diarrhea. To take an irritating laxative in such circumstances is to overstimulate an already distressed colon, perhaps inviting pain, bleeding and destruction of tissue.

Yet it is in precisely such circumstances that many people feel obliged to take a laxative. After a bout of diarrhea, the colon is empty. It may take two, three or four days to fill up, depending on the individual diet. The ill-informed victim decides that he has become constipated, not realizing that if the bowels needed to move they would eventually do so. So he takes another laxative, exacerbating the colon all over again.

Comparable errors are committed when flu patients, or other bed-ridden persons, fail to have bowel movements. Perhaps they have eaten nothing worth mentioning for several days, and have therefore manufactured insufficient feces to warrant a movement. But there is usually a relative on hand to stuff a laxative into them "to clean them out." Also, as Walter Alvarez writes, "One of the most remarkable evidences of lack of cerebration on the part of physicians and nurses is to be found in the way in which, during severe illnesses and after operations, they usually demand, and insist on getting, feces from patients who for days haven't had anything to eat!"

Some laxatives consist mainly of bulk or roughage, such as bran. Materials of that kind promote elimination by giving the colon extra undigestible, water-absorbing cellulose. Obviously,

the more undigested material in the colon, the fuller it is and the quicker the next movement happens. Also, roughage may abrade the colonic tissues sufficiently to excite them into more rapid transport of material.

Some physicians think that swallowing bran is an act comparable to swallowing Brillo, and no better for the health of the digestive tract. The theory is debatable: the healthy colon contains a protective coat of mucus that renders it quite resistant to abrasion. While the debate continues, thoughtful bystanders might as well skip bran and other laxatives on general principles, simply because the substances are usually unnecessary in the first place and habit-forming in the second.

Much the same can be said of the apples, prunes and other foods that so many people include in their diets as a hedge against constipation. Foods of that kind belong in the diet because they are good to eat, not because they stimulate the bowels. The man who thinks he cannot function without his dish of prunes for breakfast has delivered himself into servitude. If he abandons his exaggerated concern about frequency of evacuation, he can break himself of the prune habit and, more important, protect himself against the greater laxative excesses to which rituals like prune-eating so often lead.

Besides favoring certain laxative foods, persons who misconstrue defecation as an open sesame to health usually avoid any number of supposedly "binding" foods. There is no such thing. No food causes constipation. Some foods like cheese, chocolate and beefsteak are, of course, low in residue. Not much is left of them by the time the fecal stream reaches the colon. Therefore, such foods do not accelerate defecation in the sense that fruits, vegetables, grains and other cellulose materials do. But defecation, as we are at pains to establish here, does not need to be accelerated. When the colon is sufficiently freighted with undigested residue, a bowel movement occurs, and it can be relied on to occur according to the individual's own habitual schedule, if he can be persuaded to leave his innards alone.

To illustrate the lengths to which contemporary superstitions

propel us, I know someone who believes broad noodles are "heavy," difficult to digest and constipating, but accepts thin noodles as "light," easy to digest and not constipating—as if the intestines had some way of determining the former geometric proportions of the mush that arrives from the stomach.

Just as some people complicate their existence by attempting to produce bowel movements more frequently than they need to, others incur a kind of constipation by not heeding nature when it calls. Suburban commuters are especially prone to this small error, sometimes sleeping too late, swallowing breakfast on the run and dashing for the train without time for toilet ceremonies. The nerves that govern rectal activity do not wait indefinitely, however. Having emitted the signals of nature's urge, and having registered the urge as unanswered, they usually do the thrifty thing: they stop being urgent. The rectum then accommodates itself to its contents. Later, when the individual finds time to go to the bathroom, he may be at loggerheads with his rectum, which fails to function until he has undergone considerable strain. The cure for such trouble is regularity, but not the kind induced by drugs. The sufferer can change his bowel routine in a few days, using the plumbing facilities in his office instead of those at home. Or he can change his sleeping habits, arising five minutes earlier and heeding the nerve impulses from his rectum when they occur on their accustomed schedule.

We come now to forms of constipation that have less to do with conscious, misguided behavior but, like nausea, heartburn and ulcer, are best understood as unconsciously organized adaptive responses to the stresses and strains of life. One extreme form is associated with mental depression, especially among the middle aged. The physical symptoms are much like those that afflict sufferers from the lazy colon of the laxative habit: the organ simply fails to carry out its propulsive functions. An underactive colon of this kind can sometimes be stimulated by drugs but is most effectively dealt with when the physician helps the patient toward a

more positive and productive interpretation of his place in the world.

The most common variety of unconsciously adaptive constipation finds the ascending colon pallid and underactive and the descending colon in a state of muscular confusion. The propulsive muscles of the descending colon are underactive, but the muscles that contract to squeeze water from the fecal stream continue to function normally. Because the material is not moved toward the rectum, but is subjected to more than the normal amount of kneading and dehydration, the eventual stool is hard, dry and uncomfortable. Cases of this kind often are accompanied by overactivity of the rectal and anal muscles which, instead of relaxing to permit passage of feces, contract in a veritable spasm of tension. The patient often has headaches, backaches and other pains appropriate to the tense, overalert, knotted-up condition of his muscles. Conditions of this kind can be palliated with a dose or two of mineral oil, but lasting recovery depends on disclosure of factors that underlie the muscle tension of the rectum and lower colon and the abnormal flaccidity of the upper colon.

Just as the Nausea Man sometimes gets heartburn in a situation to which he reacts with suppressed anger, the sufferer from constipation sometimes has bouts with diarrhea. The diarrhea may be the familiar result of viral or bacterial invasion of the colon, which responds by flushing out the hostile organisms with water that otherwise would be saved for use elsewhere in the system. But sometimes, in cases variously described as "spastic colitis," "mucous colitis," or "irritable colon," the diarrhea represents a bodily adaptation to real or symbolic changes in the environment, an adaptation powerful enough to overcome the constipation, and then some.

Indeed, many thousands of people apparently spend their lives fluctuating between some sort of constipation and some sort of diarrhea, depending on fluctuations in circumstances or outlook. In their book, *The Human Colon* (Paul B. Hoeber, Inc., New York, 1951), Drs. William J. Grace, Stewart Wolf and Harold G.

Wolff reported important discoveries made in a close study of twenty such individuals. During periods of constipation their colons manifested the underactivity and their rectums the tension described above. During diarrhea, however, the ascending colons became hectically overactive, contracting in length and hastening fecal matter toward the rectum too quickly to extract normal amounts of water from it. At the same time, the descending colon cooperated in the process by assuming a rigid tubular shape, through which the propulsive muscles almost literally squirted the feces.

In accounting for widely fluctuating colonic behavior of this kind, the authors refer to a study made by a physician who had been a wartime prisoner of the Japanese: "There was widespread constipation, in some instances lasting two weeks, among a group of American prisoners of war from Wake Island who were being transported just after its fall to the Chinese mainland in Japanese ships. These men were badly demoralized, not knowing what to expect but fearing the worst. In addition, they were crowded and exposed to primitive facilities. When, however, following a minor infraction by a member of the group, one was shot dead, and on another occasion when all were assembled to witness a brutal public beating by their jailors, epidemics of diarrhea and 'colitis' were immediately encountered."

The persons studied by Grace, Wolf and Wolff at Cornell Medical Center were exposed to less extreme environmental changes but reacted with symptoms similar to those of the war prisoners.

> In each individual [the authors say] it was possible, after more or less difficulty, to obtain evidence that the mood or feeling state experienced during phases of diarrhea was different from that experienced during constipation. Situations of conflict and indecision, to which the subject reacted with anxiety, or situations of conflict eliciting . . . anger and resentment, which he was either unable to express or fearful of expressing, were found to be associated with diarrhea. . . . The mood or feeling state experienced by the subjects during phases of diarrhea was usually expressed in terms of "excitement," "nervousness," being

"afraid," "jumpiness," "tension," or fear. . . . Typical statements made by the patients were, "If I could only get rid of it," "I want to get done with it," "I want to get finished with it."

The predominantly constipated persons, on the other hand, presented a different constellation of features. The constipated individual was found to be essentially anxious and depressed; usually mildly but occasionally deeply. In women, chronic constipation was sometimes diminished during or just before menstruation. The constipated individual was usually effectively engaged in work, or in assuming responsibility, showing no conspicuous outward evidence of strain. But usually it was elicited that he "felt the strain," was "weary," "all in," "tense," "bored," "blue," "melancholy," "down in the dumps," or would appreciate a vacation. He commonly stated that he had to "drag himself around," that he was "short-tempered," "irritable," and "brusque." His zest for the task, though effectively performed, had waned. He often actually complained of being depressed, of feeling discouraged and discontented, and commonly was determined to "hang on" to his allotted task or responsibilities, even though he saw no special advantage or indeed, any hope for respite.

Connoisseurs of symbolism will not fail to note that the constipated individual reacts to situational difficulty by "hanging on," and the sufferer from diarrhea displays an intellectual, as well as a digestive, pattern of riddance and ejection.

"Brief episodes of constipation are frequently induced," write Grace, Wolf and Wolff, "by seemingly trivial incidents such as a change in routine, a holiday or vacation, a visit, attendance at a convention, the anticipation of entertaining guests, or taking inventory. Inversely, the circumstances constituting a threat evoking the ejection-riddance pattern of diarrhea may be as slight as the anticipation of speaking in public, taking a leading part in a public ceremony; or maybe more serious, such as the anticipation of being the principle character in a wedding ceremony or facing someone who must be told an unpleasant or shocking fact."

Constipation is far less harmful to the individual than the style of life that begets it. If the reader's constipation is the "hanging on" type just discussed, but if he is not consciously bothered by the

life he is leading, and if he can convince himself that regular, comfortable stools are of no significance to his health, he probably can adjust to the condition, stop worrying about it, and survive adequately.

It must be emphasized, however, that a wholesomely indifferent attitude toward the quantity and quality of bowel movements requires an absolute end to all straining at stool. Straining is dangerous. It encourages the development of piles, because it makes certain veins the victims of the struggle between the strainer and his spastic rectal and anal muscles. The constricted veins swell, protrude, sometimes bleed, make defecation even more difficult than before, and are subject to infection in the form of hideously complicated abscesses. Surgery can remove piles but cannot prevent recurrence. A cavalier attitude toward bowel movements is the only reliable means of preventing that.

Although many authentically constipated individuals are capable of suspending hostilities with their bowels after learning that regularity is unimportant, their situational difficulties are not affected by the armistice. Such people must be sick and tired of the futile striving, the alert listlessness, the depressed tenseness, the unattainable desire for normal relaxation, and all the other contradictory, self-defeating feelings that afflict them. These feelings are produced by the same interpretive and adaptive faculties that engender the constipation. The sufferer can get rid of both the constipation and the moods by obtaining and heeding intelligent medical care.

The individual with persistent or frequently recurrent diarrhea had better get such care without delay, whether he thinks he needs it or not. Although medical practitioners tend to differentiate less severe cases from "spastic colitis," "mucous colitis" or "irritable colon," and to distinguish these more serious (but generally synonymous) conditions from chronic ulcerative colitis, a potentially fatal disease, it is not entirely clear where one of the various diarrheas leaves off and the next begins. Moreover, few

authorities truly believe that the bleeding and the ten or twenty stools a day of ulcerative colitis appear out of the blue. All evidence suggests that the disease is the final stage in a downward trend that begins, more often than not, with less dramatic forms of diarrhea, combined in many cases with constipation, real or imagined.

The traditional theories that blame certain foods, germs, vitamin deficiencies, allergies, tight corsets and the like for colonic troubles of this kind have little support in the medical profession. Most old-line physicians, having been persuaded by reading and observation that such theories are baseless, are rather agnostic, claiming that the various chronic or recurrent diarrheas are of unknown origin. But it is safe to assert that most modern doctors are satisfied that ulcerative colitis is at least as "psychosomatic" as peptic ulcer or migraine, that "mucous colitis" is, after all, a cousin of ulcerative colitis, and that recurrent diarrhea of any kind usually has more to do with the brain than with the bowel and had better be treated that way.

Before reviewing the diarrheas and colites let us agree that an occasional day or two of diarrhea is no cause for alarm. More than likely it is a virus attack or, like occasional nausea or heartburn, a response to some circumstantial difficulty or other. A human being would have to be part statue to go through life without occasional nausea or heartburn or diarrhea. Our concern, then, is not the ordinary individual who has an attack once in a great while.

The ejection-riddance pattern of the frequently overactive colon is most pronounced in persons whose interpretations of and adaptations to the world are encumbered by extraordinary fear, hostility, resentment or guilt. As the reader already understands, these mental states are not necessarily conscious ones. Nor do they cause disease. They are produced, however, by the patient's heritage, upbringing, values and way of life, which underlie both his emotions and his bitter harvest of disease.

The sufferer may have a supposedly mild case of persistently loose bowels, controllable by drugs, the best of which is comparatively new, and contains a non-addictive form of codeine that puts the quietus on the colon and controls cases of diarrhea unresponsive to other medicines. Or he may have "irritable colon," alternating between spells of constipation and periods in which the stored-up fecal matter issues from him in too frequent movements, sometimes loose and watery, sometimes merely profuse, but often accompanied by shreds of mucus secreted by the overactive colon. Or he may have ulcerative colitis, his agitated, engorged colon having become susceptible to injury from ordinarily harmless agents like normal feces, digestive enzymes or bacteria. The colon now bleeds, ulcerates, discharges pus and mucus and often is so unresponsive to medication and counseling that physicians have no choice but to perform surgery.

Whatever the gravity of the disease that manifests itself in the overactive colon, the patient is likely to be a hard person to reach. Only a highly intelligent, intensively trained observer can readily discern the real individual concealed behind the façade of sweetness that characterizes, for reasons unkown, so many sufferers from overactive colon. Stewart Wolf comments:

> These are among the most difficult patients in the world, far more difficult than peptic ulcer patients, far more sophisticated in their ability to conceal their real thoughts and feelings, far less able to communicate honestly or to express their emotions. They seem to have an overpowering need to defend themselves. They usually do this by resorting to a mirthless kind of humor in which they smilingly demean others and then retreat quickly before offense is taken. They can keep a hospital ward in a state of havoc with their pleasant advice and their smiling complaints, playing nurses and attendants off against each other, organizing fewer drafts, more fresh air, less heat, joking in the most destructively amiable way about the poisonously unpalatable food, and so on. Obviously not all colitis patients have such personalities but enough of them do to make the phenomenon significant.

Personality can actually be accepted as an earmark of these cases, to the extent that a doctor can note its characteristics as a warning of possible susceptibility to ulcerative colitis even before the first bloody stools appear.

Whether the individual's personality conforms entirely to this curious pattern or resembles it not at all, his overactive colon is likely to be a dreadful social and vocational handicap. Walter C. Alvarez, one of the first physicians* to recognize persistent diarrhea as a bodily response to environmental difficulties, tells of a young woman who wanted to marry but got diarrhea at the merest approach of a potential suitor. He remarks that "she had to flee precipitately just when she would have most liked to have remained." This sort of thing happens all the time. There is no count of the people whose careers and private lives have been ruined by the occurrence of uncontrollable diarrhea whenever the chips were down.

The business man with "spastic colitis" has trouble getting work done during his phases of constipation, partly because he is preoccupied with alarm about the effects of "poisonous wastes" on his health, and partly because he wonders when the dreaded diarrhea is going to strike again. A few days later, when his colon becomes overactive (possibly in response to the constipation, among other fear-inspiring problems that invariably burden such an individual), he has to retreat to the bathroom every hour or two. He cannot keep some appointments and cannot complete those that he keeps.

As in peptic-ulcer surgery, surgeons use various gathers and tucks for ulcerative colitis, depending on their estimates of what

* The first important suggestion that ulcerative colitis is "psychosomatic" came in 1930 from Cecil D. Murray, Ph.D., a brilliant physiologist who studied several cases at the College of Physicians and Surgeons, Columbia University. He reported that the onset of the disease was related to situations eliciting profound fear. For example, a young man whose history showed an association between diarrhea and fear noticed blood in his stools after a fellow worker threatened to murder him. Murray's report was ridiculed and denounced.

is most likely to help the individual case. The object of all such surgery is to spare the patient further harm from his damaged, overfunctioning colon. Sometimes the organ is removed altogether (colectomy) and the patient defecates directly from his small intestine through an abdominal outlet (ileostomy), to which a cup is affixed. In other cases the outlet is cut at some point in the colon (colostomy), permitting the remaining bowel to extract water from the feces, but by-passing the more diseased part of the colon. All these operations are good, in that they usually prolong life. None of them are bargains, however, because it is unsettling to defecate through the abdomen into a tube or cup and, in any event, the whole mess usually can be avoided by anyone who learns about digestive health and changes his ways before his colonic tissue becomes seriously damaged.

As time passes, less and less surgery will be necessary in these diseases. More attention will be paid to the patient as a whole person, and relatively less emphasis will be given to the texture and frequency of his bowel movements, as if bowel movements were all that ailed him. At this writing, however, conventional therapy seeks to avoid surgery by tinkering with diet or administering various drugs thought to improve defecation. In a certain proportion of cases, the placebo effect is most beneficial, the symptoms of ulcerative colitis or less grave diarrheas disappearing for years at a time after various foods are eliminated from the diet. Certain drugs sometimes reduce inflammation in the overactive bowel and bring dramatic relief, after which trouble can be expected to flair up again, unless the placebo effect is at work or something in the patient's life has changed.

Stewart Wolf summarized the diet problem ten years ago in the *Journal of Clinical Nutrition:*

> The treatment of ulcerative colitis is . . . bound up with dietary rituals for which we have relatively little concrete evidence. It appears that the fundamental disturbance . . . is one of colonic hyperfunction . . . associated with a great increase in fragility of the membrane, with easy ulceration. Ulcerations have been produced in a segment of

gut which was disconnected from the fecal stream and not subject to any local irritation by seeds, skins or vegetable fibers. The ulcerations occurred in a setting of intense emotional conflict. . . .

A group of thirty-three patients with ulcerative colitis of varying severity treated by Dr. William J. Grace completely without reference to diet, but with major attention to matters of life adjustment, did considerably better in a three-year follow-up than a group of carefully matched cases treated by traditional means, including dietary maneuvering. Of Grace's patients, three died, eight were about the same after three years as when treatment started, thirteen were improved and nine were completely free of symptoms. Among the patients treated conventionally elsewhere in the Cornell Medical Center, six died, two were worse after three years than at the beginning of treatment, seven were about the same as before, only six showed improvement and only five were free of symptoms. One of Grace's patients had to undergo surgery, but in the other group ten patients were operated upon and two of them died following the surgery.

Wolf concludes:

Undue regimentation or restriction [of diet] may lead either to malnutrition or to frustration and resentment on the part of the patient, with deleterious effects which far outweigh the beneficial effects of the diet. On the other hand, a carefully balanced diet which involves a certain amount of ritual may have a very salutary psychological effect on an over-meticulous, compulsive patient. In such a case, however, one must not carelessly attribute favorable results to the intrinsic merits of the foods.

Because the ulcerative colitis patient's way of life is based, more often than not, on a carefully constructed set of mannered deceptions that spare him the risk of harsh confrontation with other human beings, and because he sometimes harbors extraordinary amounts of hostility or guilt, the physician must exercise monumental patience and intelligence to break through the façade. Un-

fortunately, the patient may have endured months and years of agony before becoming even slightly receptive to intimate discourse with another person, even a physician. Stewart Wolf observes: "Superficially cooperative, friendly and sweet though they are, these patients are so habituated to denying reality that they will do it even when in grave straits. They will tell you that they have no problems, or that 'those things never bother me,' or that 'everything is okay.' They much prefer to describe the appearance of their stools, and what they ate, and how they slept, and how much they hurt, and how much gas they have, and what So-and-so said to So-and-so, rather than what they think."

A case reviewed in the Grace-Wolf-Wolff book, *The Human Colon,* illustrates what can be accomplished. The woman had been suffering from ulcerative colitis for three years, during which her symptoms waxed and waned but were never completely absent. One severe episode lasted for three months. She was cheerful, smiling and, as usual in these patients, terribly sensitive to criticism, at any imagined hint of which she would launch elaborate, vehement defenses of herself. Her exaggerated dependence on the good will of others was also manifested by lavish and repeated gift-giving; yet she was notably hypercritical of the very people to whom she was so generous, making apparently jocular but actually bitter comments about their supposed ingratitude, having decided that their thanks were insufficiently effusive. She was a fastidious housekeeper, excessively careful, clean, neat and orderly. Everything she did, in short, was designed to win her the approval of others, but she often interpreted their reactions as rejection of her. Her overdependent personality and values were altogether at par for her disease.

It took only brief acquaintance for her physician to recognize all this, but much longer for him to acquire her confidence. This was accomplished by the interviewing techniques described in earlier chapters. The patient was seen twice a week for four weeks, then twice monthly for five months. After seventeen interviews her bloody diarrhea was no longer present and careful examination

revealed that her colon, formerly diseased, was functioning normally, with bowel movements daily or every other day. During the next two and a half years she was seen at intervals of two to six months and had only one relapse, a three-week spell of bloody diarrhea when she believed her husband "indifferent and uncooperative" about a dinner party she was planning. This indicated that she was not entirely out of the woods and needed more intensive counseling, which she got. She recovered promptly. In all, her treatment required twenty-eight hours of interview time, no diet and no drugs.

How can such a case be handled so easily and so economically when others turn out less well after costing tens of thousands of dollars for surgical, medical and nursing care in home, office and hospital? Can all cases of ulcerative colitis be treated that way?

To answer the second question first, all cases of ulcerative colitis cannot be treated that way, because not all patients who want such treatment can find it nowadays, and many who can find it are not receptive to it. Moreover, those who are more or less receptive do not always recover as rapidly and completely as this woman did, although statistics like William Grace's suggest that the recovery rate is higher than can be expected in conventional treatment.

To return to the woman's case, the doctor attempted to treat her entire being rather than her faulty colon. He knew that if he could become her friend and adviser, her way of life might presently alter sufficiently to reduce and even abolish her digestive difficulties. Fortunately, he was able to befriend her, and rather quickly, possibly because he was superhumanly accepting of her ways, never aroused her antagonisms and fears by showing disapproval, and, having established himself in her mind as the first person ever to "understand" her, was able to get her to talk about herself in relatively honest terms.

It developed that her childhood had been spent in constant competition with an older sister for the parsimonious approval of their parents. It apparently had been a grim life. When she mar-

ried, after working unhappily for nine years, she found that she had entered a situation similar to that of her youth: her husband, she felt, was more attentive to his parents than to her. She felt rejected and her resentment became almost unendurable, but she controlled it, reluctantly "being nice" to her husband's family.

After three years she felt so left out of things that she began considering divorce. She now began to notice blood and mucus in her stools. She reacted by quitting her job "to get even with my husband and let him assume all responsibility." She decided against divorce, however, because she saw that his companionship was better than none, and she had prospects of none. Meanwhile, of course, no matter how "nice" she tried to be, her husband repeatedly "let her down" in his persistent dutifulness to his parents. The more angry, defeated and humiliated she became over her husband's quite normal behavior toward his parents, the worse her colitis became.

As will happen when an individual finally begins discussing with another the secrets that he has formerly discussed only with himself, the words sound different and the incongruities become more apparent. After a few interviews this patient began to see for herself that she had been excessively dependent on the approval of others, especially her husband. She saw that she should try to like him, with all his real and imagined faults.

The husband himself was interviewed and proved eager to help. When the woman at last confided to him what she had been thinking about his relations with her and with his parents, she found him amazingly sympathetic. She now was able to unleash her anger, instead of concealing it, and—marvel of marvels—discovered that he not only could tolerate the outbursts but could repay them with sympathy, understanding and affection.

Experiences of that kind, contradicting the distorted values she had developed through the years, helped the woman to change. Recovery was inevitable.

Chapter 9

Intelligent Nutrition

To prevent fatigue, promote a sense of well being and increase their resistance to illness, millions of conscientious Americans fortify their diets with vitamin-mineral preparations and "health foods." The annual expenditure for such merchandise is at least one and one-half billion dollars, a state of affairs deplored as wasteful or worse by the American Medical Association, the Food and Drug Administration and other qualified organizations and individuals. The AMA has been trying to point out for years that a balanced diet is ample protection against nutritional deficiency. Its lamentations on this theme are publicized once in a while, but not often enough. Meanwhile, quacks broadcast expensive dietary superstitions to the innocent *via* radio, and vitamin manufacturers (to single out the most active and influential element in the nutrition racket), spend millions on advertisements of all kinds, including propaganda designed to multiply the amount of vitamins dispensed and prescribed by physicians. No physician needs industrial guidance to recognize the postoperative, convalescent, geriatric, pediatric and metabolic cases in which vitamins are useful. But, as we shall see, vitamins are also widely used for their placebo effect.

American receptivity to the blandishments of the vitamin and "health food" swamis is inseparable, of course, from national skepticism about the nutritive qualities of ordinary food. The skepticism relates, in turn, to the more fundamental but equally mistaken belief that foods cause or cure illness. So long as this basic misconception remains prevalent a health-seeking public will naturally carry error to a logical conclusion, spending its hard-earned one and one-half billion dollars a year on supposedly prophylactic pills and foods and doubting the motives of anyone who disputes the wisdom of the practice.

On the assumption that even the most casual reader of this book recognizes by now that food causes few illnesses and cures only nutritional deficiences (see pages 46-48), I anticipate a reasonably tolerant reaction to the following summary evaluation of food as a *preventive* of illness: a varied diet of plain, ordinary supermarket food is all that is needed to stave off nutritional deficiency and maintain health. The sciences of health have a lot to learn about the biochemistry of nutrition but have already learned more than enough to guarantee superbly hygienic nourishment to any normal adult whose daily bills of fare include meat or fish, eggs, milk products, bread, fruits and vegetables, plus whatever supplementary starches, fats and sugars strike his fancy.

A diet of that kind is not merely balanced but abundant. It contains all the nourishment that any adult needs. To take packaged vitamins in addition to such meals is a total waste of money: the body excretes most extra vitamins through the kidneys, being unable to store much more of the chemicals than is required for current use. Furthermore, as we shall notice later, overdoses of some vitamins can be harmful.

Infants and pregnant or nursing women are properly given vitamin preparations, and so are older children and adults with eccentric eating habits. But the rest of us are home free.

In reviewing the essentials of human nutrition it is customary to warn the reader that his life depends on a balanced intake of nitrogen, carbon, hydrogen and oxygen in the form of proteins, carbo-

hydrates, fats, vitamins, minerals and water. After identifying and describing the nutrient categories, the oracle exhorts the reader to include each in his dinner lest he wake up undernourished the next morning. There probably was some point in that kind of sermon during the early decades of the century, when millions of Americans knew less than they needed to about balancing the diet. But nowadays, when every grade-school child is taught the rudiments of nutrition, it seems redundant to consume a whole chapter of an otherwise useful book in a rehash of the subject. Instead, this chapter seeks to bolster its readers against unwarranted concern about their own nutrition.

One reason that otherwise sophisticated people doubt the nutritional reliability of a balanced diet is their knowledge that food is now an industrial rather than a purely agricultural product and that industrial mass production tends to sacrifice quality to quantity. There can be no doubt that many mass-produced foods do not *taste* as good as they used to. The change in taste arouses suspicion. To cite examples, the average supermarket chicken is a savorless, slightly odoriferous imitation of the bird that discriminating shoppers were able to find before the war. The ham is full of water and tastes like rubber bands. The lamb usually turns out to be mutton. The beef tends to be skinny and its texture is such a problem that retailers brag about their synthetic tenderizing processes. It's worth your life to get a rich, nutlike, authentically fresh egg. Bread becomes softer and more neuter every year. The dairy lobby wangles higher prices for skimpier milk. Heavy cream is light. Butter is tasteless. Ice cream is a watery joke. Boxes are much larger than their contents. Labels enumerate unpronounceable chemical ingredients with mysterious functions that are undoubtedly legal but evoke images of automation, not culinary art. Indeed, it is possible to purchase candy bars that seem from their labels to be entirely devoid of food products.

I could continue this dirge for pages but won't. Anybody who knows good food knows that it is harder to find than it should be. From this demonstrable fact it is only a hop and a skip to the con-

clusion that the food processers are starving us. But they are not. I assume that if there were more profit in nutrition-free foods than in nutritious ones, and if the laws were lenient on that score, the food industries would not pass up the opportunity. But nature is kind. Yonder green pea may taste like rain but, as a green pea, it contains the chemicals that make it a green pea. It contains, in other words, the essential nutrients of a green pea. The same is true of the curious oranges and mealy apples we sometimes get, and of all the other sad, efficiently engineered foods mentioned earlier. The artificially enriched bread and cereal we eat may bring tears to the taste-buds of anyone who has ever eaten decent bread or cereal, but it is as nutritious as any wheat product can be. No wheat grown in organically-fertilized soil, ground whole between special stones, and baked in individual ovens by disinfected grandmothers could nourish us better. These facts may disappoint gourmets, who wish the clock and calendar could be turned back to the days of quality food, but they are facts regardless, and have been tested repeatedly.

Malnutrition is simply no problem among middle class Americans who eat anything resembling middle class American food. They might as well convince themselves of this once and for all and stop worrying about it. They have enough other things to worry about. Consider the housewife who frets because she has neglected to provide orange juice for the family breakfast on a cold, rainy morning. She feels like a Delilah. What if her husband is attacked by a germ? Without the armor provided by his morning juice, will he be able to withstand the microbial onslaught? She makes him bundle up and urges him to stop off at the drug store for protective orange juice on his way to work. But her concern is misplaced. It is completely all right to skip the ritual orange juice once in a while, and quite all right to skip it even more often than that: other foods are equally good sources of vitamin C and, in any event, it takes weeks before the body's supply of ascorbic acid is sufficiently depleted (even by heroic avoidance of all fruits and vegetables), for any significant consequences of the nutri-

tional deficiency to arise, such as easy bruising.

In this vein, here are some other little-known truths that may help to bring nutrition into realistic perspective:

The balanced diet enjoyed by most Americans is a useful luxury, not a necessity. Other human beings flourish on much less meat protein and far fewer fats, sugars and vitamins than we consume. The body chemistry is so resourceful that it actually manufactures sugars from fats and proteins, if sugars are not supplied adequately in the diet. And it manufactures *fats* from sugars and proteins, if needed.* Unfortunately, it cannot manufacture essential *proteins* from sugars and fats. This is why humans ought to eat a little meat, fish, milk, egg or cheese and why nations lacking such fare concoct ingenious combinations of peas, beans and nuts that provide vegetable protein almost as useful as animal protein.

In regions of the world not afflicted with outright famine, the prevailing diet, though greatly different from the luxurious American diet, is usually adequate to sustain life. Difficulty does not arise until historical events, such as tyranny, drought or faddism, throw the diet out of balance. Dr. Henry E. Sigerist wrote in his *A History of Medicine* (Oxford University Press, New York, 1951): "Under the most different climates primitives devised a balanced diet. If they had not they would soon have died out. The great deal of malnutrition among them today is the result of prevailing social and economic conditions, the consequence of colonial exploitation. As long as the Bantu were in possession of their homeland, they had a balanced diet consisting chiefly of milk, mealy meal (ground African corn), and indigenous herbs. Once the white man took their land away and they were reduced to living on small overstocked farms, the cows had not enough milk, the land produced not enough corn, and the people in contact with the white man forgot the use of herbs." In prewar China, peasants ate unpolished rice or other rough grain, plus whatever else they could

* So-called sugar-free and fat-free diets do not fool the faddist's body. Because sugars and fats are essential to life, the body makes them if they are not provided in food.

scrounge; and aristocrats ate polished rice, smothered in a great variety of nourishing delicacies. Thus, both classes enjoyed good nutrition (except when natural disaster or the depredations of war lords brought hunger to the peasants). But the small clerks and civil servants of the cities suffered an inordinate amount of nutritional ailments. Why? Because they tinkered faddishly with their diet. Rather than eat rough grains like mere peasants, they ate polished rice, emulating their social betters. But, unlike their betters, they could not afford to buy nutritious supplemental delicacies, and got sick. The Western parallel to this sort of self-defeating pretense is the occasional heavy thinker who turns vegetarian, like George Bernard Shaw, and ends by getting liver injections to save his life. Another parallel may be found in persons who have been eliminating animal fats from their diets. The nutritional plight that awaits some of them will be discussed in a later chapter.

It is possible for western man to live without meat or fish. But the undertaking is neither natural nor easy for a carnivore like man, especially when he belongs to a carnivorous culture like ours.

Although nutritionists attribute the increasing size of American children to the super-abundant nourishment contained in our diet, they are not sure whether this is good or bad. René Dubos observes in *Mirage of Health:*

> One of the criteria most widely accepted at the present time is that children should grow as large and as fast as possible. But is size such a desirable attribute? Is the bigger child happier? Will he live longer? Does he perceive with greater acuity the loveliness or the grandeur of the world? Will he contribute more to man's cultural heritage? Or does his larger size merely mean that he will need a larger motorcar, become a larger soldier, and in his turn beget still larger children? The criteria of growth developed for the production of market pigs would hardly be adequate for animals feeding on acorns in the forests and fending for themselves as free individuals. Nor are they for man. Size and weight are not desirable in themselves, and their relation to health and happiness is at most obscure. . . . For man . . . mere size has

never been the determinant factor of his survival and success, either as an individual or as a species. Large size is likely to prove even less of an asset in the world of the future, and may even become a handicap. The specifications for man's body and mind may have to be reformulated in order to meet with greater effectiveness the exigencies of the mechanized world.

What all this adds up to, I think, is that a missed meal, a temporarily neglected nutrient, or a refusal to pay good money for excess vitamins and "health foods" does not make the average well-nourished American a candidate for emergency medical care. Our diet is so much more lavish and nutritious than that of any previous civilization that we enjoy an enormous margin of safety. This does not mean that our growing daughters should now be given *carte blanche* to go on a diet of ice-cream sundaes and cola drinks, but it does mean than anyone whose meals are usually balanced, in the American sense of the term, qualifies as one of the best-fed human beings in world history.

It is now time to particularize by examining nutrients that *must* be contained in the diet because the body cannot manufacture them. These nutrients are certain essential amino acids (constituents of protein) and vitamins.

The best sources of high-quality protein (protein that contains the essential amino acids) are flesh, eggs and dairy foods. Such foods are the basis of our diet but, for other people, *including millions in excellent health,* are less easily available. The reason the Japanese soldier was able to march all week on rice and a few scraps of fish is that the few scraps of fish contained all the protein he needed to march that long. Nutritionists have shown repeatedly that adults can subsist on a high-quality protein intake of about a third of a gram per day for every kilogram of body weight. This means that a 143-pound man could survive, all other things being equal, on less than an ounce of high-quality protein per day, plus accompanying fats, carbohydrates, vitamins, minerals and water. Distinguished nutritionists, conferring under the auspices of the Food and Agriculture Organization of the United Nations, have

acknowledged this but have recommended that, for safety's sake, it might be well to eat half again as much protein. For safety's sake, then, our 143-pound man should eat about thirty-four grams of high-quality protein—slightly more than an ounce.

I asked the excellent department of dietetics at the University of Oklahoma Medical Center to translate these unintelligible numbers into terms of actual food and was given a day's menu for a theoretical man who gets only thirty-four grams of high-quality protein. At breakfast he would have one scrambled egg, plus orange juice, oatmeal, cream, toast, jelly and other fodder that contains little or no high-quality protein. At lunch he would get a half-pint of milk, along with salad, fruit and other foods so low in protein that they are never mentioned in that connection. At dinner he would be presented with a three-ounce piece of steak, plus starch, greens, etc. One egg, one cup of milk and one three-ounce piece of steak gives this man about fifty percent more high-quality protein than he needs for subsistence!

I do not recommend that anyone try to live on such unsatisfactory meals. I know that if starvation rations like those were ever set on my table I would rebel. As a middle class American and proud trencherman I want meat on the table, and not three-ounce morsels either. Which is precisely the point: my corn flakes and milk, my ham and eggs, my luncheon cheeseburger, my cocktail peanuts, my evening helpings of roast and pudding and cake give me *many times* the protein I need to keep my carcass functioning. The same, I am sure, is true of you.

Naturally, I also need vitamins and can get them only by eating them, because my body cannot manufacture most of them. I am warned incessantly by radio, television and ominous advertising in the periodicals I read that I will perish if I do not get enough vitamins. That is true. But intelligent human beings may find food for thought in these additional features of the vitamin situation:

They are abundant in any reasonably varied American diet.

Their manufacturers have done such a glorious promotion job that impoverished families skimp on food so as to have money to

buy the vitamins. Affluent though our nation is, countless thousands of families are on short rations; at free clinics physicians discover again and again that the malnourished child's distraught mother has been buying it vitamin pills, the miracle substitute for food. It takes considerable effort to persuade such people that the money should go for milk and vegetables.

Because their patients so often look upon vitamin pills as the sword and shield of health, some doctors prescribe the things much as they used to prescribe sugar pills and other placebos. This is easier than educating the patient but has no lasting effect on whatever it was that impelled the poor soul to seek help in the first place—unless, of course, the trouble in the first place was a vitamin deficiency.

To render the reader forever immune to the caterwauling of vitamin advertisers and their fans, let us now review the principal vitamins, evaluate the prospects for acquiring a vitamin deficiency on a varied diet, and consider the results of taking vitamin pills as nutritional "insurance."

VITAMIN A is necessary for growth, proper vision and healthy skin. It is obtained from milk, butter, egg yolk, enriched margarine, leafy vegetables and liver and is stored in the human liver, where the supply is sufficient to keep you for many months even if you contrive to eat none of the foregoing foods for that entire time. Not realizing any of this, an occasional unfortunate decides to make her child the fastest grower on the block, and gives the infant repeated overdoses of vitamin A. The result is a tragedy: malformed bones.

THE B VITAMINS include thiamine, riboflavin, niacin and vitamin B_{12}, deficiencies of which are possible, even if rare. A flock of other B vitamins exist and are, indeed, stirred into the vitamin-mineral preparations sold by the industry, but for no good reason. It is not known that anyone ever got sick for lack of them, nor is it considered possible that anyone who ate at all could suffer such a lack.

THIAMINE, or B_1, a constituent of rice hulls, explains why people

who eat polished rice and little else come down with beriberi (Singhalese for "weakness"), a wasting disease of the nervous system that yields promptly, except in its late stages, to an improved diet. Persons who eat pork, whole-grain or enriched breads and cereals, beans, milk, peanuts and mixed green salads get all the thiamine they need, and urinate away any excess beyond the small amount that the body keeps in reserve. Because the vitamin is essential to the nervous system, it used to be a fashionable placebo, its recipients often vowing that it gave them unprecedented pep and endurance. Actually, the pills or injections merely enriched their urine. There is no evidence that excess vitamin B_1 produces extra energy.

RIBOFLAVIN, or vitamin B_2, is abundant in milk, meat, enriched or whole-grain breads and cereals, and leafy vegetables, especially raw ones. Deficiencies, completely unlikely on a typical American diet, affect the healing powers. Extra riboflavin, such as that taken in vitamin pills by persons who eat well, goes right through the body and out in the urine.

NIACIN, a B vitamin that lacks a number, prevents pellagra, a horrible affliction that was widespread in the South until people there began eating lean meat, beans, milk and wheat flour as well as the traditional fat back, molasses and cornpone. Like other B vitamins, this one is not stockpiled by the body but is so abundantly available in ordinary food that the system rejects extra dosages.

VITAMIN B_{12}, a constituent of red meat, especially liver, kidneys and beefsteak, is also available in milk, oats and wheat. It combines with the gastric secretion, intrinsic factor, and journeys to the bone marrow, where it is essential to the manufacture of red blood cells. Absence of B_{12} results in pernicious anemia, which also occurs when degeneration of the stomach lining prevents absorption of the vitamin from natural foods. When this happens, the vitamin is easily supplied by injection. For some reason or other, injections of this kind have become absolutely the favorite placebo of vitamin-happy patients and their doctors. Even though the

vitamin is not known to be useful except in pernicious anemia and severe hyperthyroidism, and is quickly excreted in the urine when administered unnecessarily, people who have no pernicious anemia are always getting jabs of B_{12}. As one wry physician comments, "They used to give unnecessary shots of B_1 but they now find B_{12} much more satisfactory, and why shouldn't they? It's eleven points higher!"

A patient recently arrived at a celebrated medical center with severe leg pains which he blamed on arthritis. He said that the first time he got the pains he went to his doctor, who diagnosed the arthritis, gave him a shot of B_{12} and produced virtually instant relief. Several weeks later the leg pains recurred while the patient was in another town. The doctor there preferred vitamin B_1 for the arthritis and gave him an injection that did not work. The doctor then doubled the quantity, with no greater success. And now here was the patient at the famous clinic, where it was obvious that he was suffering from pernicious anemia, of which leg pains are a symptom. The first doctor, who gave B_{12} for "arthritis," had been right, accidentally.

VITAMIN C, or ascorbic acid, is found in citrus fruits, tomatoes, liver, and many vegetables, particularly raw ones. A dish of cole slaw, tomatoes and green peppers has more vitamin C in it than the average portion of orange juice, in case anyone cares. The vitamin has numerous functions affecting bone growth, healing, and the health of other tissues. Scurvy, the disease that afflicted the British Navy until the Admiralty learned about the prophylactic properties of limes, is the end result of vitamin C deprivation and is still seen occasionally, but not among people who eat normal food. It is most likely to occur in infants whose milk diet is inadequately supplemented with fruits, vegetables or vitamin drops. The properly nourished body maintains no appreciable reserve of the substance, but scurvy takes months to manifest itself. Vitamin C is widely used as a placebo for nose colds, allergies, arthritis, gingivitis and various kidney ailments but is not superior to sugar pills in such circumstances.

VITAMIN D, the famous sunshine vitamin, is manufactured by the body in response to sunlight and is in ample supply for anyone who goes outdoors during the daytime. Moreover, it is added to milk during the bottling process, which means that rickets, the vitamin D deficiency, is hard to arrange nowadays. Overdoses of vitamin D given to babies by their oversolicitous parents may cause kidney stones by inducing absorption of excess calcium. Other victims of overdosage are arthritis sufferers, who may get ghastly symptoms from the stuff, but on smaller doses derive no real benefit beyond an occasional placebo effect. Babies who do not go outdoors much in winter are often given fish-liver oil, a good source of the vitamin, but nobody else is likely to need such supplementation.

Now for minerals. The only ones that the Food and Nutrition Board of the National Research Council mentions on its lists of recommended daily nutritional allowances are calcium and iron, which accrue sufficiently to eaters of eggs, dairy products, lean meat and enriched flour. All the other minerals listed on the labels of vitamin-mineral jars are needed by the human body, to be sure, and so are vitamins E and K and a few additional polysyllabic chemicals included in some packages, but diets deficient in such substances are unknown.

So much for underfeeding and its consequences. We now approach a more prevalent problem of modern industrial civilization, obesity, which sometimes involves overfeeding, but not always.

Chapter 10

New Facts about Overweight

There was a time when everybody loved a fat man, the personification of jollity, and fat women were pleasingly plump. When the corpulent chuckled that they could not lose weight no matter how little they ate, their friends nodded indulgently. Such heaviness was "probably something glandular." The hugely obese suffered social and vocational disabilities but the merely large were usually the life of the party, much sought after as companions and spouses.

The smile died shortly before World War II, when Drs. Louis H. Newburgh and Jerome W. Conn of the University of Michigan studied obesity with the best available equipment and concluded that the only significant cause of overweight was overeating. The impressively researched Michigan theory gained unusually rapid acceptance. Practically overnight, the fat man became a certified glutton, disfranchised from jollity. The fat girl was no longer pleasingly plump, now that her amplitude was supposed to be her own fault. Claims by certain overweight people that they were temperate eaters emerged now as moans, not chuckles, and were sternly rebuffed: "Scientific studies show that fat people eat too much. Eat less and you will be thin."

The new view of obesity as the penalty of self-indulgence was a smashing victory for the oversimple theory that every human ailment derives from its own single, specific cause. The victory banner still flies, but is about to be shot down. Although reducing manuals that inveigh against gluttony and pretend that the torments of starvation can be fun continue to outsell scientific literature, and although ladies' magazines continue to publish inane miracle diets in a variety of decorator colors, medical science has just about washed out the gluttony concept.

In recent years physiologists have made appreciable discoveries about the brain, the blood and the fatty tissues. Using scientific insights and laboratory instruments unavailable to their predecessors, they have been able to demonstrate that overeating is merely one route to obesity and, in most cases, *is more a result than a cause* of ill health. The one-dimensional view of the fat man as hog has given way to a complicated set of concepts which explain his superfluous flesh as the result of one or more of several inherited or acquired difficulties. Sometimes the problem resides in the cerebral apparatus that governs food intake. Sometimes the fault is metabolic, the sufferer's body making bizarre disposition of the nourishment it absorbs through the intestinal walls. Thus, the lady who says she cannot lose weight no matter how little she eats may actually be telling the truth. It is entirely possible to be a small eater yet remain fat, especially if one's parents and other forebears were fat. Drs. Edgar S. Gordon and E. Marshall Goldberg of the University of Wisconsin Medical School tell of obese patients who lost little or no weight even when confined to a hospital and given six-hundred-calorie diets. By the same token, many thin people eat like horses, an evident fact that should give pause to those who still call eating the sole cause of overweight.

By requiring theory to conform to observable truth, the scientists who advance the new concepts of obesity restore logic and common sense to a field that has been suffering from dogma. Thanks to these scientists, the day approaches when medicine will be freed of its mechanistic reliance on the overeating theory and

will be able to do more for obesity than dispense stern warnings and starvation diets.

In his book, *How to Keep Fit and Enjoy It* (Harper, New York, 1962), Dr. Warren R. Guild of the Harvard Medical School estimates that not more than two percent of obesity cases are now being treated with lasting success. New concepts of obesity and weight reduction promise to improve matters later, if not sooner. Experimentalists are making progress in their efforts to correct the inherited metabolic errors that seem to be involved in some cases of fatness. Progress also is being made in attempts to understand and control the aberrant regulatory processes that impel some people to continue eating long after natural hunger has been satisfied. Obesity will presently be less mysterious and more manageable than it now is.

Because that happy eventuality has not yet been reached, however, much of the material contained in this chapter is ahead of its time and cannot yet be applied to the reader's own case. For example, it is still not possible to identify the multiple causes of any individual case of obesity without lengthy hospitalization and intricate tests, many of which are known only to a handful of scientists.

Nevertheless, this chapter is worthwhile; it wrests obesity from the hands of the diet faddists and, for the first time, places it in perspective as an ailment governed by the same natural laws that govern other ailments.

Before inspecting the various kinds of obesity, it is essential to take a realistic look at the general problem of overweight. Its magnitude has been exaggerated beyond all proportion. Depending on which authority you read, you discover that fifteen, twenty-five or fifty million Americans are too fat, a range that demonstrates stupendous lack of agreement as to what obesity is, who is obese and what conclusions need to be drawn.

Obviously, an individual whose flesh is abundant enough to make him cumbersome needs no expert to inform him that he is obese. Likewise, the adult who outgrows every garment in the closet knows for certain that he has grown and that the clothes

have not shrunk. If such an individual feels better with the extra poundage, as is sometimes the case, it is a pitiable waste of time and substance to go on a diet. If, on the other hand, the flesh is what the ads call "unsightly," the individual can see it for himself and be guided accordingly.

The current emphasis on the alleged hazards and handicaps of fat is so great, however, that incredible numbers of people are afraid to trust their own judgment about the size of their bodies. All too often, perfectly normal people decide that they are overweight after reading one or another chart of "ideal," "desirable" or "average" weights. No chart can possibly tell an individual whether he is too fat. If he has looked in the mirror and has poked and pinched his thighs, ribs, abdomen, rear end and upper arms and cannot tell if he is thin enough, what enlightenment can he expect from a chart?

"A chart," says Stewart Wolf, "may tell the individual whether he is heavier than the author of the chart thinks a person of his height and age should be, but the information may be misleading. Individual body structures vary too greatly for charts to be universally trustworthy. A one-hundred-and-twenty-pound clerk may learn from the chart that his weight is ideal for his five-foot-three-inch frame, yet he actually may have a disproportionately fat belly, especially if his bone structure is lighter than the one the chart maker had in mind. On the other hand, a two-hundred-and-eighty-pound longshoreman may be all muscle and bone yet may be told by the chart that he is overweight. These cases are not as extreme as they seem. It is a law of nature that no two people are precisely alike, and it is a subsidiary law of nature that individual physical measurements may vary considerably from the average without being abnormal or diseased. Yet one's measurements, like those of our little clerk, may conform to the crude compromises embodied in a chart without guaranteeing normality or health."

The attempt to model the American physique to the prescriptions contained in height-weight charts gets its greatest impetus from other widely publicized statistical material that warns of im-

minent disease and early death for the fat. We are told again and again that overweight individuals are more likely to come down with heart and circulatory ailments and that they get more diabetes than their slender compatriots and are less likely to survive major surgery and are accident prone and have a shorter life expectancy. The implication is that people who reduce their weight can expect to live longer.

A contrary opinion is cropping up among increasing numbers of scientists who have actually studied obesity. They point out that certain diseases occur more often among the obese than among the thin and that stocky, portly people have a shorter life expectancy, on average, than tall, slender ones do. But there is no evidence that the obesity *causes* the diseases. Neither is there evidence that the obesity *causes* the shorter life expectancy. Nor can we say that weight reduction prevents disease for such people or lengthens their lives.

For a parallel, one might consider the well-known fact that people with red hair get rheumatic fever relatively more often than others do. One would not call the red hair the cause of the rheumatic fever. Nor would one hope to avoid the rheumatic fever by dyeing the red hair brown.

These genetic phenomena are among the great unanswered questions in biology. Some day we may know why families that incline to be stout incline also to have a relatively short life expectancy and contract certain diseases relatively frequently. We render no service to anybody when we pretend that these genetic problems do not exist, or when we pretend to have answers that are as yet beyond our reach.

A portly individual with the high blood pressure of benign essential hypertension can reduce his blood pressure by reducing his weight. Will he live longer than some other members of his portly family? He might. Will he live longer *because* he reduced his weight and his blood pressure? Scientists offer no evidence that this is so. What's more, he may not live as long as fatter members of his family who have higher blood pressure.

None of this means that every stocky person is condemned to an early grave. Plenty of tall, slender persons die young, and any number of fat people live, like Winston Churchill, to advanced ages. Life and death both resist oversimplification.

The unvarnished assertion that obesity is sometimes an inherited, constitutional difficulty revives, of course, one's memories of an earlier era when it was taken for granted that fat ran in families and was not due entirely to loss of gustatory self-control. I find the reminder pleasing. It brings obesity into phase with other observable aspects of life. Some families are thinner than others, some are fatter, some have narrower hips, some wider, and so on. The years of silence about this inescapable fact of life, during the years of overemphasis on the perils of eating, have given the national attitude toward overweight a peculiarly unrealistic bias.

I once discussed hereditary obesity with a pig farmer, pointing out that he used to breed fat hogs when he sold a lot of lard, but is now breeding thin hogs for a different market. If some hogs and other livestock are constitutionally obese, why should not man recognize that his own overweight is a matter of more than diet?

The answer was uncomplimentary: "The trouble with people like you," said the farmer, "is that you think there's no difference between people and livestock. People are people and livestock is livestock."

It is necessary, of course, and even somewhat ennobling to bear in mind that people are not livestock. But the qualities that differentiate us from other mammals do not abduct us from the mammal category. Our digestive and assimilative processes, the enzymes that participate in them and the nervous mechanisms that govern them are not significantly different from those of a pig or a mouse, especially as regards the accumulation of fatty flesh. It would be most surprising to a biologist to discover that inherited, constitutional obesity does not exist in human beings.

Some of the most impressive knowledge about constitutional and other varieties of obesity has been developed by Dr. Jean Mayer, a Harvard nutritionist, physiologist and biochemist whose studies of mice and men have gained wide attention among other life scien-

tists but, for reasons that elude me, are neglected elsewhere. Not long ago Mayer surveyed a large number of fifteen-year-old children in the Boston area, discovering that the obese ones usually had obese parents. Among parents of more or less normal weight, only six to eight percent of the children were fat. When one parent was obese, forty percent of the children followed suit, and if both parents were fat, eighty percent of the children were also fat. "Adopted children," says Mayer, "do not follow this pattern, although they are somewhat more obese in obese families than in nonobese families. This indicates a not very startling conclusion, that both heredity and environment have something to do with [these] disturbances."

An even more striking demonstration of the role of heredity is available in studies of identical twins separated in infancy and raised by different families. Many sets of such twins have been studied, and, according to Mayer, nobody has yet found one fat and one thin twin. If one is fat, so is the other, regardless of the environment in which each has been raised. The modifying effects of environment are suggested, however, by studies that show weight differences as greater than any other measurable difference between such separated twins. In short, one fat twin may be five or ten pounds fatter than his fat brother.

In his work with constitutionally obese mice, Mayer has discovered a vast number of biochemical characteristics that distinguish the creatures from other mice. One reason that they accumulate more body fat than other mice is their avid propensity for manufacturing fat from glucose and other materials in the bloodstream. Having made more fat than normal mice do, they retain it in luxuriant abundance—even during periods of starvation. When a normal mouse is starved it lives on its fatty reserves, converting them into energy. But the constitutionally obese mouse does not adapt so efficiently to starvation. Its system continues to manufacture and hoard fat and the animal finally starves to death without having used the fat stores for the emergency energy that could have prolonged its life.

Which brings us to some scientific findings of the greatest im-

portance: *certain human beings suffer from the same kinds of constitutional defects that are found in obese mice.* Drs. Goldberg and Gordon have demonstrated that many obese human beings tend to manufacture disproportionate amounts of body fat. They have also demonstrated that this tendency often coexists with an impaired mechanism for converting stored fat into energy. Gordon and Jean Mayer each think that conditions of this kind are significant in about one of every four cases of human obesity, which would explain why some individuals lose little weight on reducing diets.

Now that scientists have restored the respectability of the common-sense notion that certain people inherit a tendency toward fatness, examples of inherited obesity come easily to mind. The proudly prominent derrière (steatopygia) of Hottentot women is an inherited characteristic, a notably profuse accumulation of fat that occurs in women who are not otherwise corpulent. Similar fleshly idiosyncracies distinguish families closer to home: some run to thin necks and fatty buttocks, or thin buttocks and fatty upper arms or fatty stomachs. Certain people get fatty jowls but their ribs stick out. Some women with heavy thighs can diet until their faces look like death masks, but their thighs remain fat. The supposition is that those particular fatty deposits are similar to the adipose tissue of constitutionally obese mice, and that the lady could starve to death without ever using up the potential energy contained in the fat. The supposition remains to be tested, but tests are in the offing.

Does all this mean that some people are condemned by heredity to the disfigurement of extreme overweight and that there is nothing they can do about it?

"Undoubtedly a certain fraction of obese people can do little about their condition," says one expert. "But the probability in the large majority of cases is that the obesity is neither entirely hereditary nor entirely a matter of overeating. The alternatives of 'all' and 'nothing' seldom occur in nature, and the ratio between the two varies from individual to individual. As nearly as we can tell, the inherited tendency toward obesity exists in many people, but is not sufficiently pronounced to make disfigurement inevitable. I

would not be at all surprised to learn in time that most obesity stems from a familial tendency combined with an eating habit or a psychological problem. The eating habit or the other problem of self-regulation can be controlled nowadays. The familial tendency toward obesity is a more difficult problem but will be controllable in the future through manipulation of the abnormal metabolism. In the meantime, however, most fat people can reduce their weights below the levels of pronounced obesity, even if all cannot safely attempt to become sylphs."

The modern physician advises people who are heavy, but not very heavy, to stop worrying about it and, if possible, forget about it altogether. Those whose weight is a genuine problem are urged to temper the yen for Hollywood-style slenderness with a little realism: "Someone who is very heavy, and upset about it, should take a good look at his brothers, sisters, parents and grandparents for an inkling of whether his trouble is related to his physical heritage. Also, he should take an honest look at the number of calories he eats in a day. If he comes up with a small number of calories, belongs to a family of fat people and has himself always had a tendency to put on weight, he can assume that he is constitutionally obese and will have a hard time thinning down. If the picture is not quite clear, in that some of his family are fat and many are not, and especially if he discovers that he is eating three or four thousand calories a day, he probably can take off considerable weight, provided he is capable of adhering to a diet."

To say that many people with an inherited propensity for getting fat can keep their weight within tolerable limits by eating sensibly does not play into the hands of the diet faddists, whose criteria are of a far different order. As anyone knows who has ever read the breathless articles that celebrate miracle diets, the faddists believe that anyone with sufficient determination can become a fashionably slender reed. The idea is outrageous. The modern doctor stresses that the only persons qualified for slenderness of that sort are those who inherit an appropriate physique. The rest of us are better off when we accept a modest amount of extra cushioning, regardless of fashion. This advice holds to some extent even for

naturally thin people who, through overeating, have become somewhat heavier than nature intended. Unless the extra weight seriously sabotages the individual's appearance, or slows him down or makes him otherwise uncomfortable, thus providing a powerful incentive to reduce, the ordeal of dieting simply substitutes one problem for another without necessarily contributing to the individual's long-range health and longevity.

It must be evident by now that one reason it is impossible to accept reducing diets as the sole, specific cure for obesity is that overeating is not the sole, specific cause. Another reason is less controversial: reducing diets seldom work, except temporarily. As Warren Guild pointed out earlier, treatment fails in ninety-eight percent of obesity cases. And, as the next chapter will show, such failure is entirely understandable—and virtually inevitable—when dietary treatment is unsupported by more fundamental measures.

The problem of overeating, like other problems associated with obesity, has been grievously oversimplified. Contrary to the prevailing view, overeating is but rarely a manifestation of whimsical gluttony. More often it is the product of environmental conditioning, an ingrained habit that reflects the values of the family and culture in which the individual was raised. Or, human behavior being full of paradox, overeating may be an act of rebellion against the values of the childhood environment, rather than an act of conditioned conformity. In these and other difficult cases, overeating resembles heartburn, ulcerative colitis or alcoholism as part of the ailing individual's inappropriately patterned responses to the adversities of life.

Many parents believe that fatness is a sign of health, happiness, prestige, wealth, or all four. When such attitudes are communicated to the young, and are accepted, they become enormously difficult to counteract. In some families, whether they have outgrown such old-world superstitions or not, eating may become associated with love in the mind of the child who turns out later to be an overeater. Meal time, after all, is when mother is attentive to the baby, no matter how inattentive she may be during the rest

of the day. Her concentration on his meals may condition him so thoroughly that forever after he will use food as a substitute for or supplement to the love of other people. Nor need the example be so extreme; even if mother is consistent in her attentions to the child and does not distort the significance of food by noticing him only at meal time, it is natural for Americans to equate their abundant meals with warmth, good fellowship, the unity of the family. An individual displaced in later years from warmth, good fellowship and family may turn to food in his nostalgia, and eat himself to obesity.

Freudians associate overeating with arrested sexual development in which the libido remains at the oral stage. Others claim it betrays a fear of pregnancy, or a desire for pregnancy, or a deeply-buried wish to fortify oneself against danger. Jean Mayer is not entirely enthusiastic about such intuitions but finds that obese children derive less comfort from eating than might be supposed. He says that most of them associate the word "eating" with tension and pain rather than with pleasure.

Some of the most difficult cases of obesity are those in which overeating crosses the vague boundaries of custom or habit and becomes a compulsion comparable to that of alcoholism or cigarette smoking. Stewart Wolf tells of a patient who was a professional criminal, one of several black sheep produced by a quite staid family. In addition to his endless battle of wits with the forces of law and order, the patient was troubled by uncontrollable urges to eat. Not that he was hungry. For him, eating was a symbol of ravenously aggressive attack against enemies. When badgered by police or by his colleagues in crime, he would gravitate to a restaurant, as the inveterate, zestless smoker gravitates to the tobacco counter, and would eat a huge meal. This was bad, but what sometimes happened next was worse. "When I'm leaving the restaurant," said the man, "if the cashier looks at me cockeyed, or somebody gets in my way, or I have trouble finding my coat I get so damned burned up I have to go to the restaurant next door and eat another meal."

Unlike the habitual overeater, who sometimes thinks he is hungry, the compulsive overeater may have long since satisfied his appetite and may be conscious that this is so. But he keeps eating, unable to stop. In some cases, the compulsion intensifies in direct ratio with the realization that overeating is harmful. Stewart Wolf observes, "A smoker in a foxhole will have difficulty resisting a cigarette there, where the breach of blackout may endanger his life. But he may have no difficulty in refusing the cigarette offered him at a cocktail party. Some compulsions are hardest to shake at times when they can cause the greatest harm."

An additional example of compulsion is relevant to this discussion of obesity because it is produced by the exact opposite of compulsive eating—a compulsive *inability* to eat. The ailment is called anorexia nervosa, and may be one of the most fascinating of human afflictions, as well as one of the most tragic. Its victims, usually women, starve themselves to death even though they are hungry. They are not only hungry, which means conscious of the need for food, but they have appetite, a desire for food. They often are extraordinarily good cooks and accomplished party-givers. But they cannot eat. When hospitalized for the feeding that prolongs their lives and the psychotherapy that sometimes, but rarely, cures them, they have to be watched as carefully as alcoholics. Whereas the alcoholic secretes bottles of liquor in lamps, toilets and other unlikely places, the sufferer from anorexia nervosa claims to have eaten everything on the tray, but has spilled the food out of the window, or has stuffed it into the laundry bag.

Any cigarette smoker who decides that such people are crazy had better not throw stones. Sufferers from anorexia nervosa may be crazy in the colloquial sense but, almost without exception, are effective and constructive human beings. Even though they cannot eat, and may be nothing but skin and bones, they remain forceful, active members of their communities, dredging up incredible stamina and energy from their undernourished bodies. They are, in sum, not crazier than smokers.

Which brings us to the brain and its sovereign role in the es-

tablishment and perpetuation of obesity. At the base of the remarkable organ is a tiny tract of tissue that determines when an individual has had enough to eat, and tells him so. This regulatory mechanism, known as the satiety center, performs in response to the amount of sugar in the blood. As feeding proceeds, the blood-sugar level increases until it reaches a magnitude that the satiety computer interprets as appropriate. The satiety center now emits signals and the proprietor suddenly feels sated. If he is normal, he now stops eating.

Close to the satiety center is a feeding center, the purpose of which is to interpret and register the need for food. Inasmuch as both centers, like other parts of the brain, are connected to the cerebral cortex, abode of human values, and also are subject to damage from infection, it can be seen that numerous things can happen to derange an individual's eating habits. If something is wrong at the feeding center, he will eat when he does not need to, or will not eat when he needs to. If something is wrong at the satiety center, he will continue to eat long after he should have stopped, and may continue eating until his stomach becomes so distended that parts of the brain other than the satiety center advise him that he is full.

Dr. Albert J. Stunkard, professor of psychiatry at the University of Pennsylvania, is one of the advance guard of psychiatrists who pay attention to the epochal discoveries being made by neurophysiologists. He points out that everybody would be fat if the normal satiety center were not a tricky little device that actually anticipates the body's needs. We feel sated, and stop eating, while our stomachs are full. The food still in the stomach remains undigested for hours, which means that hours pass before the body has actually received all the nourishment of the meal. Obviously, if the brain did not signal satiety until the body became nourished, we would remain busily at table much longer than we do, and would eat much more excess food than we do. The sophisticated satiety center preserves us from that.

Stunkard now makes a key point about the satiety center: "We

are no longer forced to explain all eating as a manifestation of an increased hunger drive. Increased activity of the feeding center may, indeed, produce overeating. But it could also result from a decreased activity of the satiety center; and these two forms of overeating may differ dramatically."

It is assumed that one of the most familiar derangements of the satiety center takes place under the childhood conditioning referred to earlier: for whatever reason the child is over-fed, the satiety center is trained to react to a higher level of blood sugar than it would in a child who customarily ate smaller, more natural quantities of food. Later in life, the child is inevitably obese. If he decides to reduce, his main difficulty will be hunger, because his satiety center will not be satisfied by the blood-sugar levels achievable on the starvation diet of a reducing plan.

Such a person, as Stunkard pointed out above, is less the victim of an uncontrollable urge to eat everything in sight than of an inability to stop eating once he starts. "Many obese patients," he writes, "describe their overeating in terms far more appropriate to a failure of satiety than to an increase in [the compulsion to eat]. How rarely do even intensely neurotic obese persons tell of an irresistible compulsion to eat large amounts of food! And how frequently does the exasperated housewife tell of her inability to stop nibbling once she has begun!"

Stunkard illustrates the distinction between the compulsive desire to eat and the inability to stop eating with the case of a man who was supposed to be a compulsive eater, but really wasn't.

> The patient's overeating had begun abruptly following a bout of encephalitis at the age of twelve, and it had been present ever since, not apparently affected by changes in his life situation. This seemed unusual if his overeating were indeed compulsive, and investigation raised further doubts about the diagnosis. He said that he did not feel any compulsive quality to his overeating. Indeed, he never felt any strong urge to eat, and he was perfectly content to forego food for periods of as long as eighteen hours during experimental studies which claimed his attention. His overeating afforded none of the relief of tension which

might be expected to follow the performance of a compulsive ritual, nor did it arouse any apparent guilt. Instead, he attributed his overeating to a disinclination to stop eating as long as food was available. In short, this man, who had suffered extensive brain damage, ate very much like a rat with experimental damage to its hypothalamic satiety centers.

Investigators who use chemicals or electric current to interfere with the functioning of the satiety centers of laboratory animals report that the creatures continue eating as long as food is available, but show none of the signs of normal hunger. For example, if they have to work to get at the food they do not bother. Their eventual obesity is attributable entirely to the failure of the satiety center to limit intake. Unlike constitutionally obese animals, they can be restored to normal weight by dieting, and they retain normal weight as long as they are restricted to normal rations.

Stunkard declares that one of the more common human examples of failure of the satiety center is the night-eating syndrome.

> Persons with this distinctive eating pattern . . . may eat little or nothing before noon. By supper, however, they have begun to eat heavily, and they continue all evening, often until late at night. When asked to describe their feelings during such periods these persons rarely speak of being hungry, and many of them even volunteer that they are not overeating because of hunger. They report, rather, that they frequently find themselves "nibbling" and just can't seem to stop. It is noteworthy that if they cannot begin eating they rarely develop any strong desires to eat or make any great effort to obtain food. Even when they are severely agitated, there is none of the goal-directed urgency of the addict deprived of his narcotic or the alcoholic at the outset of a binge.

There is no reason to believe that the night-eating syndrome results from any irreversible damage to the hypothalamic satiety centers. It seems, rather, a reaction pattern which occurs during periods of life stress and which disappears with relief of that stress. Its characteristics, however, suggest a functional impairment of the satiety apparatus.

Once we can describe overeating *not* based on an increased hunger drive, overeating which *is* based on an increased hunger drive becomes

a meaningful idea. Viewed in this critical manner, one form of overeating definitely seems to result from an increased hunger drive. A small number of obese persons overeat in a pattern which we have called "binge eating." Such eating often has an orgiastic quality and enormous amounts of food may be consumed in relatively short periods. In contrast to most obese persons, binge eaters *do* report an irresistible compulsion to overeat and their descriptions are concerned far more with the intensity of their need to eat than with any inability to stop eating. Eating binges often begin with explosive onset and are usually followed by periods of remorse and self-condemnation. Although binge eaters emphasize the mysterious "out of the blue" quality of their binges, acquaintance with their life situations reveals that the binges occur during periods of life stress. They are particularly common during depressive reactions, and, in contrast to other forms of overeating, appear to have highly personalized unconscious meanings.

Perhaps the most familiar kind of obesity, and the most amenable to dietary treatment, seems to be associated with a failure of the hunger and satiety centers to adjust to changes in the individual's mode of life. Like other parts of the body, these centers are ordinarily responsive to abrupt, dramatic changes in the environment: a man stricken by grief over the loss of a loved one is not likely to be hungry, no matter how appetizing the meal. But if the change in the environment is less pronounced, hunger and satiety may not be affected. The phenomenon is especially noticeable in the middle years, when some people no longer need to work as hard as they used to, either in the office or at home. Income is higher, a secretary sharpens the pencils and fetches the water from the cooler, lunches are longer and more alcoholic, the boy next door does the lawn-mowing and raking, bridge and television tend to supplant tennis and golf and, all in all, caloric intake rises while the expenditure of energy declines. As every schoolboy knows, when one ingests more calories than one uses up, the surplus is transformed into fat. Thus, middle-aged spread, the cure for which is dieting and exercise.

Although exercise is generally disdained by apostles of miracle

reducing diets, Jean Mayer and other careful students of obesity have shown that the absence of exercise is often a primary factor in obesity. Constitutionally obese mice are languid, not because they are obese but because they have languid constitutions; obese children often eat no more than thin ones, but are usually much less active; farmers who want to fatten animals for slaughter keep them in coops and pens so that they will not run off the food they eat.

An inherited tendency to manufacture and hoard body fat, lack of exercise, childhood conditioning, faulty interpretation of and adaptation to the world, malfunctioning satiety and feeding centers —these are the factors most likely to combine in the algebraic equation that resolves in a case of obesity. At present, the individual's own equation can only be guessed at, but already research physicians are beginning to recognize the person whose metabolism synthesizes more fat than it should. Medicines to restore the proper balance are being tried out. Other investigations, equally fascinating, will lead some day to control of compulsive eating. Counter influences will be introduced right into the hunger and satiety centers of the brain, restoring normal function.

But in the meantime, some people who are fat would like to reduce, and many people who are fat really should reduce, whether they would like to or not. Their prospects are contemplated in the next chapter.

Chapter 11

How to Lose Weight

To obtain food, the stuff of survival, a hungry man will break and enter, rob and kill. He may even betray his family, his friends, his nation and his faith. Concentration camp prisoners who lacked religious or political beliefs strong enough to fortify them against the dehumanizing effects of starvation became informers for the Nazis, trading their honor and the lives of their compatriots for food and the promise of survival. War prisoners of the Japanese dreamed each night of food and some conspired against each other for garbage from the captor's table. Compared to the primal instinct aroused by hunger, the sex drive is a whim.

One need look no further than hunger to discover why reducing diets fail in ninety-eight of every hundred cases. Based as they usually are on ritualistic treatment of obvious symptoms and neglecting, as they usually do, the fundamental problems of the individual who suffers the symptoms, the diets require him not merely to tolerate hunger but to be hungry in the presence of food. Only an extraordinary person can endure such unnatural circumstances without concerted, expert assistance.

By definition, a reducing diet is a starvation diet. It provides

fewer calories of energy than the body requires to maintain itself in its present state.

To compensate for the deficit, the body raids its own fat deposits, converting the fat into usable fuel. In time, the reducer weighs noticeably less than when he started the regimen, having nourished himself on his own tissue.

He may be sufficiently exhilarated by this cannibalistic triumph over himself to continue with the program, but he is likely to backslide sooner or later. His hunger, after all, is a biological signal of starvation, and his thoughts design themselves to match. Like an alcoholic who has managed to stay dry for a while he may think of dozens of reasons why it is better to be less rigidly abstemious. For example, he may notify himself that his self-discipline deserves a small reward. "Have I not proved that I can lose weight at will? Let's break the diet just this once." So he trespasses a bit and forgives the trespass, which makes it difficult to avoid subsequent trespass. People in such a state of mind need what the social workers call "help." But they seldom get it and cannot always use it when they do get it.

The offense against instinct is the most basic but by no means the only reason that conventional weight-reduction programs fail. The guarantee of defeat is supported by additional factors such as these:

The goals of reducing diets are often unrealistic, requiring the dieter to try to lose too much weight or to lose weight too rapidly.

Some individuals are simply not good candidates for extensive weight loss. Reducing programs may do them more harm than good.

Ritualistic dieting, unsupplemented by measures such as physical exercise and intelligent medical counseling, oversimplifies an intricate problem and, not at all contradictorily, complicates its solution.

Flaws of this kind obstruct our reducing programs only because the nature of obesity is so widely misunderstood. As shown in the previous chapter, the condition seldom derives from gluttony or

other caprice, but is usually treated as if it did. This is the chief weakness of the "miracle" diets dispensed in reducing manuals, magazine articles and the salons of quacks. The error is less likely to be found in medically-supervised reducing programs, although an inordinate number of physicians, not yet attuned to recent developments in the science of physiology, continue to speak to their fat patients in terms like these:

1. Obesity results only from overeating.
2. It can be corrected only by rigid dieting.
3. You will be hungry most of the time, and you should be, because hunger is normal.
4. You have to distinguish between bodily hunger, which is normal, and the sensualism of appetite, which is your problem.
5. You will not starve. The diet will provide all the vitamins and proteins you need and, through its caloric deficit, will enable your body to deplete its stores of fat.
6. You have a choice between eating yourself into an early grave or depriving yourself of the sensual pleasure of overeating.

The only one of these assertions that even approaches an accord with scientific truth is Number Five: the patient will not starve, in the fatal sense of the word. But he probably will act as if he were starving. If he tries to lose a large amount of weight he will need intensive moral support (a) to lose the weight and (b) to maintain his new slenderness.

Although most of the other listed errors were dealt with in the previous chapter, it may be useful to go over the ground again, for emphasis:

Obesity results not only from overeating but from constitutional idiosyncrasies, usually inherited. Moreover, overeating is less a cause than an effect. It is attributable to derangements of the brain's regulatory apparatus, or to faulty ideas that subject the apparatus to misrule. In such cases a mimeographed diet does not qualify as curative treatment.

Hunger is not a normal condition, except at mealtime. Further-

more, there is no scientific basis for the generalization that obese people *eat* themselves into early graves. Perhaps some do, but others eat no less and are equally obese, yet live as long as anyone. The short life expectancy of the obese is, therefore, a statistical concept that describes the tendency of some stocky, portly people to die rather earlier than most thin people do. The phenomenon cannot be accounted for in terms of diet but begins to become comprehensible when viewed in terms of genetics.

Against this background, the differences between the modern and the conventional views of obesity can be expressed in two sentences:

1. Obesity may sometimes be a serious handicap, a threat to health and happiness, but few cases are as grave as we have been led to believe.

2. Less can be done, or should be done, for some cases of obesity than we have been led to attempt.

It is impossible to overemphasize that some people should not try to reduce their weight to fashionable levels and some should not try to reduce at all (except, perhaps, when the project has moderate goals and is undertaken in a hospital under careful supervision). Dr. Warren R. Guild explains in *How to Keep Fit and Enjoy It:*

> A program of weight reduction in many obese people can indeed be *harmful*. A reducing diet is synonymous with partial starvation. Anyone who is starving, be it an obese individual on a self-imposed diet or a victim of a prison camp, is edgy, irritable and *hungry*. Most starved people also are depressed. They are willingly or unwillingly deprived of a form of sustenance that gives us all satisfaction—obese people particularly. Their spirits fall to rock bottom. Patients on weight-losing programs occasionally deteriorate into a serious melancholia requiring psychiatric attention. Only patients with an intense desire and good motivation should be encouraged in their efforts to lose weight.
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> If a patient earnestly desires to lose weight . . . it should only be attempted when his other life situations are reasonably stable and tranquil. To take on a program of weight reduction when he has

major problems is unfair and dangerous, as well as generally unsuccessful. Other conflicts may be overpowering in his present situation. No physician should add to the patient's edginess and the subsequent *failure* of his weight-reduction program. I do not accept patients seeking weight loss if they have additional problems at the time. I tell them to forget about their weight temporarily and that it is not sinful. I suggest they maintain their present weight in spite of the implied and unimplied exhortations of friends and family, that they should feel neither ashamed nor guilty about their present weight and that they come back to see me when "the heat is off."

For many abnormally fat people the heat is never off, as Dr. Guild would be the first to agree. They can be treated successfully only when their obesity is seen in its context. To take weight off and keep it off, they need assistance against the more fundamental troubles that so often account for overeating.

The best candidates for weight loss are those with middle-age spread. Their minor bulges seldom are attributable to profound difficulties of any kind. Most such people can treat themselves quite successfully by eliminating second helpings and sweets, taking walks and doing a bit more physical labor around the house. Anybody who does not lose a pound or two a week on a routine of that kind can then tinker with his intake of starches and fats, attempting to place dietary emphasis on lean meats, fruits and vegetables. If this leaves him too hungry and/or does not bring a loss of weight, he had better abandon the project altogether or go to a physician for expert guidance.

Medical care is essential, of course, for persons whose fat is profuse enough to make them unattractive and for cumbersome persons who cannot seem to lose weight no matter how little they eat, children who are fatter than they want to be (or fatter than their parents want them to be), and persons who have the devil's own time trying to eat less. In many such people, fatness is merely one of an assortment of related problems. A reducing routine, as Guild points out, can complicate the other problems, or vice-versa, and considerable knowledge and wisdom, plus a

certain amount of luck, are required to get the fat off and keep it off.

Dr. Albert Stunkard, one of the world's few authorities on matters of this kind, acknowledges that even the most expert care is no assurance of lasting results. "Most obese persons," he says, "will not stay in treatment. Of those who stay in treatment, most will not lose weight. And of those who do lose weight, most will regain it."

The most direct route to failure is, of course, the determination to achieve a Hollywood physique in weeks, an irrational state of mind that tends to arise in people who did not have Hollywood physiques *before* they got fat and cannot realistically expect to develop such beauty by reducing. In weight reduction, as in everything else, to set unrealistically grandiose goals not merely announces defeat in advance but, perhaps unconsciously, *excuses* defeat in advance. The trait is pronounced among overeaters, just as it is among alcoholics. Some physicians advise certain overeaters to deal with their problem of self-control a day at a time and to seek a gradual, attainable end to gross protuberances rather than a quick, unattainable beauty.

The dieter's path is booby-trapped at every turn. If he is able to survive the attacks of hunger that oppress him at the beginning of his program, and if he manages to lose ten or fifteen pounds, he may then find that the reducing diet is no longer a reducing diet. His body, having begun to conserve energy, as starving bodies do, and having lost a bit of weight besides, no longer requires as many calories as it did in fatter days. The diet that once took off weight now serves nicely to maintain the new, lower weight. If the victim wants to lose still more weight, he must reduce his food intake to a new, lower level, which will make him hungrier. To avoid, or at least delay, such a saddening situation, many physicians use appetite-depressant drugs, usually one of the amphetamines. If the patient's overeating is not entirely a matter of exaggerated appetite, but is related to habit or compulsion, such drugs are of little use, however. Dr. Sidney C. Werner described

the amphetamine problem in an address to the Combined Staff Clinics of the College of Physicians and Surgeons of Columbia University and the Presbyterian Hospital: "It is probable that these agents are effective but they soon lose their efficacy and, at a time of emotional upset, they are little protection against the urge to eat."

It should be added that the drugs increase the pulse rate and make some patients as tense and shaky as they would be if they were not taking chemicals and were hungry. Nevertheless, the amphetamines are in wide use and help some patients to lose enormous amounts of weight—losses which usually are recovered after the chemical crutch is removed.

A persistently popular idea traces obesity to an underfunctioning thyroid gland and induces some practitioners to give thyroid extract to fat patients. Scientists with whom I have discussed the technique say that it is based on half-truths and is hazardous. Apparently weight can be lost when the metabolism is speeded up with thyroid, but the medication is potentially dangerous for any patient who does not have a thyroid deficiency to begin with. The treatment suppresses the activity of the patient's previously normal gland and, if prolonged sufficiently, may cause the gland to atrophy. Moreover, there is no justification for the theory that people with underactive thyroids are automatically obese. Such people may be inactive, which encourages weight gain, and may gain even more weight if they happen to eat a lot, but there is no certainty about it. Also, some thyroid patients accumulate a lot of water in their systems, which makes them heavy but not necessarily fat. Nevertheless, research workers are experimenting with a pituitary hormone that stimulates the patient's own thyroid. The maneuver may prove helpful in managing metabolic obesity.

One favorite kind of pill has no particular chemical effect on the obese but assuages their hunger by forming a bulky mass of entirely non-nutritive cellulose in the stomach. Feeling full, the patient no longer needs to eat. The same effect is achievable by eating large amounts of lettuce and celery, but not many people can go through life taking such pills or eating so much lettuce and

celery. After the novelty of comparative slenderness wears off they begin substituting meat and potatoes for pills or celery and soon regain their weight.

The central point is that reducing pills work only during the first brief enthusiasm, when a placebo will often do as well. One well-advertised product is nothing but a caramel candy, for example. Naturally, it depresses the appetite a bit, as any sweet food will. But if candy were the secret of slenderness we would all be as narrow as threads.

The most successful recent innovation among reducing aids is the canned liquid that provides balanced nutrition at the rate of two hundred twenty-five calories a can, four cans a day. The American Medical Association complains, with incontestable fervor, that people should not risk nine-hundred-calorie diets without medical supervision. In fact, most physicians think that only a rare patient should risk so lean a diet even *with* medical supervision.

High-protein, low-protein, high-fat and low-salt diets have all had brief vogues among adventurous reducers and those who sell them advice. When any such diet provides fewer calories than the individual body needs to totter through a day's existence, weight is lost. Therefore, trick diets are no more effective than others. Some are worse. For example, a low-protein diet may be so lacking in protein that the dieter develops a protein-deficiency disease, which can be fatal and, even if caught in time, is less desirable than being fat.

A low-salt diet, required in certain cardiovascular ailments, usually brings about a rapid loss of poundage, most of it in the form of excreted water. The body, it should be explained, needs to maintain a balance between salt and water; when one ingredient is in short supply, the body rids itself of the other. But fat, not water, is the villain in obesity and weight lost through dehydration is eventually recovered, probably because the dieter cannot stand the lack of salt, increases his intake, and needs more water to restore his system to balance.

For many people, a period of hospitalization is an indispensable

first step toward weight loss. The individual who says he loses no weight no matter how little he eats may lose a lot of weight on the carefully controlled diet fed him by the hospital. This means that he has been gulling himself and his physicians for years, eating more than he realized or more than he would admit. The hospital also is the very best setting for the establishment of the kind of doctor-patient relationship that supports the obese against the rigors of starvation.

Stewart Wolf, who has treated numerous obese people by processes initiated during hospitalization, says that the first question to be answered in any case of overweight can be asked before hospitalization: "Is a diet really advisable? If the patient is incapable of realistic self-appraisal he must be helped to decide whether his weight is a genuine problem that requires concerted treatment. Is he authentically obese? Does the weight slow him down? Or does he actually feel all right? Is it possible that he simply is worried about the dictates of fashion, and thinks he needs to reduce because the fat over his ribs exceeds the half or three-quarter-inch regarded as 'normal' by proponents of so-called pinch tests? Rather than subject such a person to the needless bother of formal dieting, I prefer to inform him that the fashion elsewhere in the world might well require his pinch test to yield a measurement of an inch and a quarter. If he insists on losing weight he can do it by eating a little bit less. Over a period of months he will lose weight satisfactorily, and there is no need to make a major dietary campaign of the matter."

A heavyweight who is willing to achieve his miracles gradually is more likely to lose substantial poundage than one who is in a hurry for results. If he eats two eggs for breakfast instead of three (or one instead of two), and reduces his daily bread-and-butter intake by one slice and his daily cocktail quota by one drink, he will lose about thirty pounds in a year, or fifteen pounds in six months. Moreover, he will do it without feeling as if he were starving himself to death. I shall not trouble the reader with the arithmetic of all this, except to point out that 3,500 calories equal

a pound of body weight: one less egg, one less slice of bread-and-butter and one less drink a day add up to around thirty pounds of body weight a year, no matter what.

When the modern physician prescribes a reducing diet more elaborate than the kind just mentioned, it is because the patient is seriously encumbered by fat, needs all-out assistance to get rid of the burden, and should not have to wait many months for improvement. To make dieting less onerous and more effective, the physician emphasizes to his patient that the only medical requirements are that the diet be well-balanced and that the number of calories remain within prescribed limits. "Great latitude is permissible in choice of foods," says Wolf. "Some people feel hungry unless they get some fat on their plate. Others need extra sugar. These idiosyncrasies can be satisfied on most reducing diets, and it is a mistake to overlook them. The patient is encouraged when he learns that it does not matter what he eats, once he has attended to his bodily needs for protein, vitamins and minerals. If he wants most of the rest in the form of starches or sugars or fats, it makes no difference. There is no such thing as a fattening food. But extra calories are fattening, and should be avoided."

The popular supposition that fatty foods are more fattening than other foods may derive from the fact that pure fat contains slightly more than nine calories per gram, whereas protein and carbohydrate contain only four. A dish of bacon contains many more calories than an equal volume of corn flakes—but a calorie of bacon adds no more weight than a calorie of cereal. People who claim they reduce by cutting out sugars or fats or starches actually reduce by ingesting fewer calories. The kind of food, to repeat, makes no difference.

Some beliefs about fattening foods are arrant superstition. For example, toasted bread contains as many calories as untoasted, and white bread is not more fattening than dark. Carbonated beverages are not more fattening than non-carbonated ones of equal sweetness. Indeed, the bloating effect of the bubbles may help the obese picknicker to stop nibbling for a while. I could go

on with this, but the point is made: any food that falls within the caloric limits of a reducing diet is no more fattening than any other food.

Although some slender North Americans maintain health on one meal a day and many slender South Americans achieve the same result on five or six meals a day, most reducing diets require the patient to eat three times a day, no more, no less. The theory is that we are, after all, a three-meal-a-day culture and anyone who is overweight to begin with and eats four meals a day may be tempted to take on more nourishment than he should. On the other hand, continues the theory, the overweight person who eats his prescribed number of calories in three sittings instead of one requires his metabolism to tool up and get to work three times as often, thereby burning up a number of calories that might otherwise be available for conversion into fat.

This expenditure of calories by the digestive process is known as specific dynamic action. Much is made of it in reducing manuals even though science has not yet learned enough about it to speak of it with as much assurance as the reducing swamis do. A person who takes on his 1,200-calorie reducing diet in one sitting instead of three may possibly lose a few ounces less per week than he would if he took the 1,200 calories in three installments, but other factors may make his adoption of a three-meal schedule entirely inadvisable. The strain of reducing is hard enough for some people without demanding that they superimpose the additional strain of changing their eating schedules. What's more, the human body is so adaptable and so economical that slenderness can be achieved on one or three or eight meals a day—and so can obesity. Therefore, one should not always make too big an issue of the number of times a day one goes to table. It is far more important to police the total caloric intake and to do everything possible to make a reduced intake bearable.

Although exercise is in ill-repute among those who damn overeating as the sole cause of overweight and hail dieting as the sole cure, it takes no experimental scientist to demonstrate that lack

of exercise adds weight and increased exercise takes weight off. Even the most conventional adherents to the overeating theory agree that a ditch-digger requires more calories to sustain him than a billing clerk does, even though the men are of equal weight. The difference, of course, is that the laborer expends more energy in the course of a day, and needs more fuel. If the ditch-digger were to switch to a sedentary occupation without changing his diet, the extra calories would remain in his body as fat.

Studies of adolescent obesity by Dr. Jean Mayer and others have revealed that the main difference between fat youngsters and their slender friends is that most of the fat ones are relatively inactive, spending far more time sitting around than playing games. Some of the inactive fat ones eat more than some of the slender ones, but many eat less. What's more, it appears that the muscular activity of many fat people actually conserves energy. Many obese men and women sort of fall from one foot to the other when they walk, but the lean are more likely to push off with one foot and swing the other foot ahead, expending considerably more energy and consuming more calories in the process.

All this being so, is exercise a practical means of reducing weight? It is estimated that the average person would have to walk more than thirty miles to consume the 3,500 calories of energy contained in a pound of body fat. After such a hike one might be ravenously hungry and eat enough to regain the pound, plus.

Yet the body does not work quite that way. The consumption of food neither rises nor falls in exact, automatic ratio with the expenditure of energy. For example, active people who become less active in the middle years do not automatically reduce their food intake to match, which is why they gain weight. For an example at the opposite extreme, skiers expend as many as two thousand calories of energy an hour, but do not eat six-thousand-calorie meals after three hours of racing. They could not eat that much if they wanted to.

Some people are habituated, of course, to the notion that any

unusual exertion necessitates extra feeding to restore the tissues and fend off starvation. The more they exercise the more they eat, because they think they must. The solution for them, and for other would-be reducers, is to recognize that the body is adaptable. This adaptability can be exploited. Weight can be lost by combining moderate exercise (which never causes immoderate hunger), with moderate dieting (which also never causes immoderate hunger).

For a painless way to lose a pound a week for five or ten weeks, one need only bear in mind that the pound can be lost by increasing the expenditure of energy and reducing the caloric content of food by a grand total of 3,500 calories per week. That amounts to five hundred calories a day. A brisk walk for half an hour a day will consume half the calories. The other half can be accounted for by one less piece of bread and butter than usual and one less cocktail than usual each day. In due course additional sacrifices will be necessary to maintain the reducing process for another five or ten weeks, because the smaller body will have achieved equilibrium with the smaller diet. But when sacrifices are on this infinitesimal scale, brain and body adapt to the tiny changes in habit, and it is relatively easy to lose weight and keep it off.

People who lose no weight no matter how little they think they eat, or who cannot eat less no matter how much weight they gain, make a dreadful mistake in attempting to correct the difficulty without medical help. Their abortive "crash" diets may help them to lose weight for a while (thereby exposing the error of their previous claims), but they soon fall off the wagon and demonstrate a phenomenon known as the rebound effect. For reasons that have not yet been explored properly, such people usually become fatter than ever before, and they achieve the new poundage in fantastically short periods of time.

Jean Mayer thinks that the rebound effect may be more than a matter of increased calorie consumption. He says that rats whose satiety centers have been destroyed become obese quite slowly. After their weight has been reduced by dieting, if they are again

permitted to eat freely they become obese much more rapidly than they had the first time. It is possible, says Mayer, that the original gain of weight changes the animal's biochemistry, making its adipose tissue more avid for fat.

"The situation is very obvious in man," he goes on. "An individual puts on weight from the age of twenty-five to forty-five and then all of a sudden he decides to be young and attractive again and he reduces by 'crash' diet. The second time it does not take him twenty years to get back his obese weight; he can do it in very few months, with a tremendous rate of fat deposition. If you have an individual who goes up and down a great many times, every time a new fad appears in the paper, he ends up accumulating a formidable amount of weight, and possibly having done more damage to his system than if he stayed obese. This may be one case in which it is better *not* to have loved and lost than never to have loved at all. There may be good justification for not reducing individuals who are conspicuously incapable of keeping at their reduced level. The genetically obese mouse does not live as long as the normal mouse, but if you subject it to that sort of up and down, the life span is very much shorter."

Only a physician, and a remarkably accomplished one at that, can help the individual to decide whether his case lends itself to a weight-reduction program. If, as is probably true in more instances than people realize, the obesity is at least partly hereditary, any effort to take off substantial amounts of weight may be more dangerous than it is worth. If, on the contrary, the problem seems to be related more to some failure of the individual's regulatory mechanisms, a sensitive physician can sometimes work wonders.

"The key element here," says Stewart Wolf, "is the connection between our satiety centers and the parts of the brain that interpret experience. By exploiting the capacity of those higher parts of the brain to learn, to acquire new values and new skills, we can change. We can educate and control ourselves. We can regulate our intake of food. We can lose weight."

A compulsive eater can lose thirty or forty pounds during a

short period of hospitalization. In the sheltered environment of the hospital, with others assuming responsibility for the solution of his day-to-day problems and deciding how much food he should eat, and when, the patient reacts splendidly. But what happens when he leaves the hospital? Can he discipline himself when left to his own devices?

"Much more than self-discipline is involved in reducing food intake," observes Wolf. "A prerequisite of self-discipline is self-confidence. It is not enough to tell such a patient, 'We took thirty-five pounds off you in the hospital. You have only fifteen more pounds to go. If you don't stick with the diet you're crazy.' Of course he's crazy! If he weren't somewhat crazy he never would have got into such a jam in the first place. And when the physician tells him to 'pull yourself together and stop being crazy,' the patient becomes estranged. All of a sudden, the kindly doctor who supervised the thirty-five-pound weight loss reveals himself as just another arm of authority, a personification of everything in the world that opposes and ridicules the patient and prevents him from functioning. To avoid so harmful a conclusion to what otherwise might be a successful cure, the physician must use the period of hospitalization as an opportunity to become the patient's true friend and confidant, his safety valve, his cheering section, the individual on whom the patient can rely for prompt, effective support in times of doubt or fear. The relationship must be maintained at that level for weeks and months after the patient goes home."

In Chapter 6 I reviewed the case of a shoe salesman whose bleeding ulcer was related to his difficulties with the world, most particularly his difficulties with a cold, belittling wife. After the patient was in better condition and the wife somewhat thawed (the two processes were interdependent), they asked their physician to see their seventeen-year-old daughter, who weighed one hundred and ninety pounds. Like many other obese people, the child used food as a refuge from life.

"She was a friendly girl," the physician reminisces, "but un-

usually inarticulate. All she could say at first was 'Aw, shucks,' or something to that effect, meanwhile plotting to obtain the next snack. She had abandoned hope of winning the esteem of her mother, not realizing that the woman showed esteem for nobody. And she thought her father was a boob, because the mother was always saying as much. There was nothing in any of this that ordained obesity for the girl, but her particular style apparently favored overeating rather than some other kind of adaptation. Her problem, of course, was her assumption that as the no-account daughter of a boob father and a disappointed mother, she was ineligible for a normal life and normal gratifications.

"It seemed to me that the girl's disdain for her father was tempered by a rather repressed sympathy for his gentle, understanding ways. Obviously, she could not cultivate that tender feeling without contradicting the mother's opinion of the father and confirming the mother's low opinion of her. I believed that the youngster would see herself in a new light once she learned that it was permissible to admire a gentle, understanding person like her father. The process was less intricate than it might have been, mainly because my own reputation in the household was good now that the father's ulcer was causing no trouble. The child was quite trusting of me. I rewarded her trust by imitating the father's moderate, yielding attitude toward everything. It did not take the girl long to decide that attitudes of that kind were probably acceptable if a man could have them and still be a good physician. Her opinion of her father began to soften. Meanwhile, the mother's improving behavior made the picture altogether rosier. The girl presently saw for herself that she was not a natural-born outcast but an ordinary, quite estimable person with a rather ordinary set of parents. It was no problem to get her on a reducing diet now that eating was no longer her only solace, and especially now that she felt qualified to emerge from her shell and taste life. In two years she lost about seventy pounds and, like the girl in the advertisement, was engaged to be married."

Another illuminating case involved a woman whose great need in life was a calm, predictable environment. With the capacity

for self-defeat to which we all are heir, she had married a man who specialized in keeping the environment in a tempestuous state. He was a lean, hungry Cassius type, forever at odds with his colleagues, employers and neighbors. When an employer's business policy outraged him, which happened at frequent intervals, he would resign his job and move to another town, dragging his dispirited wife along. Eating was her only defense against these frightening dislocations and the ever-present threat of subsequent dislocations. She got fat as a house, and protested that she could not lose weight no matter how little she ate.

The couple sought medical help after the husband developed a bleeding duodenal ulcer. He was a difficult patient, full of guilt about having deserted his mother at an early age, when his roaming began. He acknowledged to the physician that he probably would feel better if he learned how to talk over his problems with his wife instead of storing them for periodic explosions. But he did not learn how to do this quickly enough. His ulcer perforated and an operation was necessary. In the meantime, the wife had asked for help with her obesity.

"I got her in the hospital for a few days to prove to her that she could lose weight and could become accustomed to a 1,200-calorie diet," says the physician, "but she did not really begin to make progress until she and her husband began to sing out of the same hymn book, as the saying goes. The man's educational experience in ulcer treatment plus his chagrin at having had to undergo surgery made him more amenable to realism than he had been. He actually began to communicate with his wife. They moved to a small town, where she quickly became the busy clubwoman she had always wanted to be, and lost fifty pounds in four months. Whenever he threatened to quit his job and pull up stakes, she had to battle him to make him stay, and she had to battle herself to prevent a recurrence of her eating binges. But she won all the battles. The atmosphere was now decisively different from what it had been: by warning her of his intention to blast the boss and leave town, the husband now gave his wife unprecedented op-

portunities to talk him out of such rashness. Her ability to do this afforded great satisfaction to them both. As to her eating problem, her success in approaching something like equal partnership in the marriage helped her to cultivate a new sense of importance and self-confidence, a frame of mind that seldom requires the artificial solace of overeating."

The story does not have a happy ending. When last heard from the couple was undergoing its worst crisis in years and the wife reported herself unable to resist the attractions of knife and fork. Whether she will regain control cannot be predicted. Her physician comments:

"Management of obesity is a treacherous process. One can never settle back and say that the affliction is conquered any more than one can assume that an alcoholic who has stopped drinking is no longer an alcoholic. Cases of obesity that yield to treatment cannot be expected to remain cured without occasional relapses that usually demand renewed treatment. Some exceptional patients manage to remain masters of their problem for the remainder of their lives without additional help, just as some alcoholics succeed in avoiding drink, but one can never be sure."

No more need be said here about the treatment of obesity. When it is related to overeating the affliction resembles the other difficulties reviewed in this book. It responds most promptly and enduringly to the kind of care that embraces the person along with his symptoms.

Chapter 12

The Big Cholesterol Scare

Claude Bernard was a nineteenth-century Frenchman with a twenty-first-century mind. He supported the revolutionary germ theory of his friend, Pasteur, but recognized that it would leave most medical problems unsolved. He foresaw with regret that generations of lesser scientists would be so obsessed with the specific causes and cures of disease that they would concentrate on the study of germs and would neglect the study of people. He knew that this would distort medicine, because no illness could be blamed entirely on germs.

Bernard's attitude toward statistics was similarly perceptive and foresighted. He was an advocate of statistics, urging that biological scientists use them in evaluating and communicating the results of their work. But he knew that statistics were only a tool, a device, a convenience. In the year 1860 he predicted what would happen when statistical gyration became a substitute for scientific thought:

"I expect that in another hundred years or so, everybody will not only be using but abusing statistics and will rely on statistics to find things they were looking for in the first place."*

* The translation is from an informal talk by Dr. Jean Mayer, an authority on Bernard.

As a true scientist, Bernard believed in trying to see things whole, to discern the interrelated forces and processes that account for growth and change, health and illness, life and death. He knew that these essentials were usually invisible to people who fastened too quickly on attractive details or statistics, people so eager for achievement that they constructed all-purpose theories (medical or chemical or social or political) from details before understanding the environmental processes that gave their observations full meaning.

The tendency to isolate statistics or other details from their natural setting is a pronounced characteristic of the social sciences and is not much less evident in medicine. It explains why highly-publicized cure after highly-publicized cure has turned out in time to be no cure at all, and why vaunted theory after vaunted theory has collapsed when finally subjected to gazes more penetrating than that of the ambitious innovator.

Although the scientific method is uncompromising in its demand for what Jacob Bronowski calls "the habit of truth," in *Science and Human Values* (Julian Messner, Inc., New York, 1956), fame, fortune and the methods of commerce are less discriminating and more seductive. A medical scientist who makes an honest error that happens to be marketable is under enormous pressure to compound the error. If he is at all susceptible to temptation he reveals his half-cooked findings at the next International Symposium (with international ballyhoo), takes bows, grants interviews and accepts generous new financial subsidies before he has given himself and his colleagues sufficient opportunity to check the work and find the mistake. He does not usually succumb to such enticements, for the habit of truth is well developed in most scientists, but he succumbs frequently enough to constitute a problem.

Human motivations are so complicated that a scientist of this kind may not even realize what he has done. He may, indeed, remain consciously devoted to the duties and disciplines of his calling and never repeat the error of permitting premature exploitation of his work. But during that one unfortunate episode he is socially

indistinguishable from the scientist who is dedicated less to duty than to what I might as well call stardom.

The big cholesterol scare is a stark example. It finds numerous reputable scientists deeply committed to a dietary theory of heart disease that seems unlikely to hold up. The theory never should have been publicized as effusively as it was, considering the amount and the quality of the research on which it was based. Its partisans, decent people who deserve credit for honest error in the event that they prove to have espoused an error, could not have intended to frighten the world into buying tens of millions of dollars worth of poly-unnecessary-polyunsaturated oils. But that is what happened. The cholesterol theory was seized upon by commerce and became big, insubstantial news leading to substantial sales.

Cholesterol, as an endless succession of newspaper and magazine articles have been at pains to point out, is a waxy constituent of the blood. The substance is important to nervous tissue and the production of bile, vitamin D and certain hormones. Unfortunately, it also is a constituent of fatty deposits that constrict the arteries, much as mineral scale clogs household plumbing. When the coronary arteries, which supply blood to the heart muscles, become constricted in this way (atherosclerosis), a fragment of the deposit may flake off or a clot may form and cause an occlusion—an obstruction. Deprived now of blood, the starved muscle fails and may die.

The chemistry and mechanics of atherosclerosis and coronary occlusion remain mysterious, but the presence in the diseased arteries of cholesterol, a constituent of some foods, has long been interesting to scientists. About 1915 a Russian investigator, N. N. Anitchkov, showed that rabbits got atherosclerosis on cholesterol-rich feed. Later other scientists, such as the great Walter Cannon, confirmed this and it also was learned that chickens could acquire atherosclerosis when fed cholesterol.

The relevance to human medicine was a little doubtful because the rabbits and chickens had not been eating rabbit and chicken

food, which contains practically no cholesterol. The animals had developed the disease when their bodies had been asked to accommodate to diets containing even higher proportions of cholesterol than human beings eat. A man fed nothing but gravel and chicken feed might develop atherosclerosis or a peptic ulcer before dying of starvation or an intestinal obstruction, but no veterinarian would conclude from the experiment that gravel and chicken feed should thenceforth be withheld from chickens.

Be that as it may, following World War II the animal experiments were repeated. Advances in biochemistry permitted more refined methods of measuring cholesterol and fats. Large numbers of people were so frightened by the experimental results that they reduced their consumption of eggs, meat and other cholesterol-rich foods, hoping thereby to avoid heart attacks.

Just when the low-cholesterol diet gave promise of becoming a national obsession the public learned of scientific findings that exposed the anti-egg maneuver as misguided. Studies had demonstrated that foods high in cholesterol were by no means a crucial factor in causing high levels of blood cholesterol. Moreover, diets low in cholesterol did not reduce blood cholesterol unless the diets were drastically unbalanced in other respects. It appeared that the most striking reduction of blood cholesterol attainable by dietary means was brought about by meals so deficient in protein that the body could no longer manufacture cholesterol or muscle or hormones or other tissues and chemicals essential to prolonged survival. It seemed, in sum, that the body needed cholesterol and would continue to manufacture it in all circumstances short of grave starvation.

The cholesterol uproar might have abated at this point if the matter of saturated fats had not arisen. The key factor, it was announced, was not high-cholesterol food but dietary fats saturated with hydrogen atoms. Animal fats such as butter, lard and suet are saturated and raise the cholesterol level in the blood. But certain vegetable oils that have not been hydrogenated, and are therefore unsaturated, do not have this effect. Indeed, when saturated

fats are eliminated from the diet and unsaturated fats are substituted, blood cholesterol diminishes.

Interesting though these findings must have been to students of biochemistry, they should not have been viewed as bearing directly on the problem of heart disease. They cast no light on the essential question of whether the well-known statistical relation between high levels of blood cholesterol and high incidence of heart attacks was a matter of cause and effect. They did not suggest that someone who reduced the level of cholesterol in his blood would protect himself against a heart attack.

Some of the scientists who illuminated the effects of saturated and unsaturated fats on blood cholesterol levels tried to say that they were offering no prescription against heart trouble, but their voices were drowned out by the margarine commercials. So, too, were the voices of other scientists who had tried to point out that polyunsaturated fats do not reduce blood cholesterol levels unless substituted for the saturated fats in the diet.

The persuasiveness of the commercials was magnified by certain statistics. As if Claude Bernard had never lived, the world was regaled with curious statistical charts purporting to show that nations which eat more fat have more fatal heart attacks than nations which eat less fat. The United States seemed to eat most fat, and was worst off.

A superb paper presented by J. Yerushalmy, Ph. D., of the University of California, and Herman E. Hilleboe, M.D., New York State Commissioner of Health, to a 1957 meeting of the American Epidemiological Society, traced the thought processes of those who produced and supported the statistics. The following paragraphs are adapted, with admiration, from that paper:

In 1953 a cautious proponent of the statistics wrote that "it must be concluded that dietary fat *somehow is associated* with cardiac disease mortality at least in middle age."*

* I have added italics to this and the following two quotations, to emphasize the escalation of enthusiasm among those who had swallowed the statistics.

One year later a somewhat less cautious proponent said of the same statistics, "There *appears to be a strong, if not convincing correlation* between the amount of fat in the diet and the death rate from degenerative heart disease."

And a year after that an advocate of the same statistics was emboldened to throw caution to the winds:

"(T)here is a *remarkable relationship* between the death rate from degenerative heart disease and the proportion of fat calories in the national diet. A regular progression exists from Japan through Italy, Sweden, England and Wales, Canada and Australia to the United States. *No other variable in the mode of life besides the fat calories in the diet is known* which shows . . . such a *consistent relationship* to the mortality rate from coronary or degenerative heart disease."

Neither the statistics nor the increasingly reckless conclusions drawn from them survived close scrutiny. Drs. Yerushalmy and Hilleboe, wondering why the statistics were based on the diets and death rates of only seven countries, decided to examine similar data for twenty-two countries. They found that Israel consumes about as much fat per capita (or at least has about as much fat available per capita) as does Mexico, but that the Israeli death rate from heart and circulatory disease is about eight times as high as the Mexican. They found that the United States serves itself not much more fat than Norway does, but that the U.S. death rate from these ailments is more than three times the Norwegian. They found that Italy has more heart disease than the Netherlands does, but on less fat.

Yerushalmy and Hilleboe were no more enthusiastic about their own statistics than about the statistics they had discredited. They pointed out, in the spirit of Claude Bernard, that all statistics of this kind have to be taken lightly. Who knows how much fat a nation actually eats and how much gets thrown, American style, into the garbage pail? Who knows how accurate each nation's cause-of-death statistics are? How many of the people who supposedly died of heart disease actually died of something else? How

many people who supposedly died of pneumonia actually died of heart disease? How many of them might not have died at all if medical care were better? On the feeble strength of a statistical mess like this, why decide to eliminate animal fats from your diet?

Indeed, why. Yerushalmy and Hilleboe now delivered the *coup de grâce*. They turned, tongue in cheek, to the statistical relationship between heart deaths and national consumption of protein. They found "that the association between dietary protein and heart disease is at least as strong as that between dietary fat and heart disease. This clearly suggests that the dietary fat–heart disease association is *not* unique or specific since the association between *fat* and heart disease mortality is not as strong as that between *animal protein* and heart disease."

I have no doubt that some promoter would have loved to use the Yerushalmy-Hilleboe protein statistics to launch a profitable crusade against meat. I think this would have happened if it had not been abundantly clear that the two scientists would knock a huckster's brains out for misusing their work. Yet the promoter would have been peddling a theory not much less substantial than the saturated-fat theory.

The big cholesterol scare has been subjected to numerous other scientific refutations of a caliber comparable to that of Yerushalmy and Hilleboe. Most members of the public have not heard of the work, but should:

Dr. J. C. Paterson of London, Ontario, noting that U.S. scientists were unable to predict from an individual's blood-cholesterol level whether his health would suffer, performed numerous autopsies which demonstrated that persons with severe atherosclerosis did not necessarily die of it and did not necessarily get heart attacks, but that people with only mild atherosclerosis sometimes got coronary occlusions and died. The pattern was so disorderly that Paterson found it hard to understand why his good neighbors to the south persisted in blaming heart disease on dietary fats, even assuming that the fats contributed to atherosclerosis.

Dr. Oglesby Paul of the University of Illinois, a former presi-

dent of the American Heart Association, a conservative organization which has been under cruel pressure to assist in the anti-cholesterol, anti-animal-fat promotion, studied 1,985 middle-aged men employed by a Chicago firm. He found no significant differences in diet between those who developed coronary disease and those who did not. Of eighty-nine new cases of heart trouble among the men, some befell those who ate the most fat and an equal number were found among those who ate the least.

Dr. J. J. Groen, the resourceful Dutch investigator, knowing that the sparse vegetarian diet of Trappist monks gives them much lower blood cholesterol levels than other monks have, took the phenomenon a step further. He compared 181 Trappists with 168 Benedictine monks, whose diet contains meat and otherwise resembles that of non-monks. He found no difference between the two groups in the incidence of heart and circulatory trouble.

It may be that the composition or quantity of our diet is in some way relevant to our atherosclerosis, but proof is lacking and so is any evidence that changing one's dietary pattern will either ward off the disease or prolong life. On the contrary, the present hysteria about saturated fats and cholesterol may lead to real harm.

For instance, medical scientists who look twice before scrambling onto fashionable bandwagons have not overlooked the inescapable fact that man has been eating saturated fats for eons, and uses their unique fatty acids to energize his heart muscle. Would it not be an ironic twist if the zealous person who tried to avoid heart disease by restricting his intake of saturated fats were actually depriving his heart muscle of the nourishment it needs?

Another aspect of the polyunsaturated-fat mania that is well known among scientists but unpublicized elsewhere concerns the fats' propensity for becoming rancid (peroxidized), more easily than saturated fats do. A rancid fat is poisonous to several important bodily processes, including the one involved in utilization of Vitamin C.

Another vitamin, E, seems to prevent the peroxidation (ran-

cidity) of fats. But to replace the body's stores of saturated fats with unsaturated, more easily peroxidized ones could conceivably place an undue burden on the Vitamin E mechanism and throw the system out of kilter.

Many medical scientists are more interested in the relation between heart disease and neutral fats (high triglycerides), than in blood cholesterol. These neutral fats, a normal constituent of blood, are somewhat more ominously responsive to fatty diets than cholesterol is, but are not easily controlled by dietary means. In fact, one has to eliminate fat from the diet altogether to eliminate the neutral fats from the blood, a hazardously impractical measure. As if this were not complicated enough, diets high in carbohydrate also seem to induce high neutral-fat levels in the blood under some circumstances.

Although no reader of this book is likely to rush to new dietary extremes on the strength of such hints about neutral fats, our new restraint should be strengthened. Stewart Wolf points out in this connection: "Forces other than diet are readily implicated in determining the concentration of neutral fats and cholesterol in the blood. Vigorous exercise, for example, mobilizes fat from body stores and increases the amount of blood cholesterol. Also, in life situations that arouse emotional stress and are frequently burdensome, we find that cholesterol and fats are mobilized as if unusual exertion were called for. Indeed, by discussing troublesome topics with a patient one can easily change the levels of fat and cholesterol in his blood."

An elegant demonstration of the effect of mental processes on the blood and the arteries was made by Drs. C. G. Gunn, Meyer Freedman and Sanford O. Byers, who implanted electrodes in the brains of rabbits. Animals whose higher nervous equipment was electrically stimulated developed much more atherosclerosis than other animals did. Moreover, their blood mobilized far greater amounts of fat.

One of the most convincing arguments advanced by proponents of polyunsaturated oils and low-fat diets holds that Japanese who

live in Japan and eat the low-fat diet of that country have less heart trouble than their children who live in Hawaii, where the diet adheres less to old-country tradition and includes more saturated fats. And Japanese or their descendants who live on the mainland of the United States, where the diet bears even less resemblance to that of their forefathers, have more heart trouble than Hawaiian Japanese do. Similarly, Italian immigrants and their American offspring get more heart disease than their kinsmen in Italy.

This kind of information is most compelling to anyone untrained in the exotic art of trying to see things whole. Before becoming ensnarled in dietary details of the Japanese migration eastward and the Italian migration westward, however, a trained intelligence insists on finding out whether any force besides dietary change might account for heart disease. Having learned that there are indeed such other possibilities, the scientist bears them in mind during his subsequent consideration of the problem. Meanwhile, of course, he declines to give up bacon: none of the evidence before him, migrations notwithstanding, makes more than a statistically coincidental case against saturated fats.

A small Pennsylvania town named Roseto is an entertaining example of where such careful attention to the rules of science can lead. Most of Roseto's 1,670 residents are direct descendants of families that emigrated there between 1882 and the early decades of this century. The others are surviving immigrants. The town, then, is homogeneous. Its people verify the theory about Italians eating more saturated fat in the United States than in Italy. In fact, they eat more saturated fat than most other Americans do. They raise and slaughter pigs, and are great lovers of bread dunked in the rich, larded sauces with which they cook. They eat as much or more fat than the nearby residents of Bangor (Welsh descent), Nazareth (German), or Stroudsburg and East Stroudsburg (typically mixed, average American). But they get less heart disease than their neighbors, less than other Americans, less than their relatives who move from Roseto to Brooklyn.

Stewart Wolf, familiar with the little town, had noticed that its people seemed especially fat and jolly. He had also noticed that they consumed more than an ordinary amount of pork, drank a good deal of red wine, worked hard and played hard. He noticed, furthermore, that there appeared to be very few widows around the place. Local physicians said there was practically no heart trouble in Roseto. An investigation seemed appropriate.

In the summer of 1962 a team from the University of Oklahoma surveyed Roseto death certificates for the years 1955 through 1961. They also studied the Bangor, Nazareth, Stroudsburg, and East Stroudsburg death certificates. The patients named in the certificates were traced through the records of local hospitals and thence to their personal physicians, all of whom were delighted to cooperate in the novel inquiry. The team discovered that annual death rates from coronary artery difficulties in Bangor, Nazareth and the two Stroudsburgs ranged between 2.5 and 3 per thousand —about the same as the national average. But in Roseto the death rate from the same cause was only one per thousand. Moreover, during the seven-year period under study, no man younger than forty-seven died of a heart attack in Roseto.

"It was not surprising to find a dearth of widows in Roseto," reported Wolf. "This was the only community of the five where the number of men aged fifty-five or older actually exceeded the number of women."

The resistance to heart trouble of the Rosetanos, as they call themselves, had now been documented. The next step was taken in December, 1962. A delegation of seven physicians, three technicians and a dietitian went to Roseto from Oklahoma and stayed a week, examining 333 of the inhabitants over the age of twenty-five, studying their diets and the fat and cholesterol content of their blood. The fact that they seemed to eat more than the average American ration of animal fat was now documented, as was the local tendency toward broad girth. But the cholesterol content of the Rosetano blood was no higher than average, and nothing unusual was noted in the fat content of the blood.

From these data, which are admittedly still preliminary [reported Wolf with the cautiousness of his profession] I think it safe to conclude that obesity and the ingestion of relatively large amounts of animal fat are not necessarily associated with alarming death rates from coronary artery disease . . . The reason for the relatively salubrious condition of the Rosetanos is not clear at the present moment. Genetics and ethnic factors may be important, although it is noteworthy that relatively young deaths from coronary artery disease have been documented in the families of Rosetanos who have moved into neighboring communities or to Brooklyn. The most striking feature of the community is the way in which the citizens seem to enjoy life. They are gay, boisterous and unpretentious. The wealthy dress and behave the same as their more impecunious neighbors. They are mutually trusting (there is no crime), and mutually supporting. . . . Whether or not this sensible way of life contributes to the good health of the Rosetanos is still to be determined.

If the Roseto study does not entirely demolish the diet theory of heart disease it surely adds perspective. There can be no doubt that anyone foresighted enough to be born and raised in Roseto can eat all the saturated fat he wants without running as much risk of heart trouble as would threaten him if he lived in Stroudsburg, Brooklyn, Chicago or Los Angeles, dosed himself with safflower-oil capsules and put corn-oil margarine on his diet bread.

Can it be that life in a stable community where nobody tries to get the better of anyone else is better than corn oil as a prescription against heart attacks? Can anyone really doubt that this is so?

The growing interest of medicine in matters of this kind signifies the emergence of medicine as a social science, one of the humanities. This evolutionary change is of greater import to the future health of the world than all the drugs, diets and surgical procedures developed since the days of the cave.

Chapter 13

Miscellany

Readers whose own dietary or digestive questions have not been answered in the preceding chapters will probably find what they are looking for in the following brief reviews.

ACIDOSIS: A serious blood condition related to diabetes and kidney and lung diseases, this ailment has nothing to do with food or the stomach. However, the term often is misused in reference to a mythical blood disturbance supposedly brought on by "acidy foods" or "acid stomach." Fortunately, the acidity of the blood is not affected by the acid content of food: the absorptive mechanisms of the kidneys and intestines dispose of excess acid by shunting it into the urine, not the blood. Indeed, the blood in the region of the stomach always becomes *more alkaline* when the stomach secretes acid, since the stomach's glands extract their acid from the blood. Except for diabetics and kidney and lung patients, acidosis is sheer superstition.

APPENDICITIS: Physicians recognize this inflammation of a small intestinal *cul-de-sac* as one of the most important reasons for acute abdominal pain and are always careful to consider the possibility when a patient complains of such pain. Despite its familiarity,

however, appendicitis is difficult to diagnose precisely, although many fewer normal appendices are being removed nowadays than in the past. There is no real evidence, by the way, that an individual can avoid an inflamed appendix by being careful not to swallow grape seeds or fruit pits or skins. The disease often includes obstruction of the narrow appendix by bits of fecal matter, a situation that arises regardless of the kind of food the patient has been eating.

BELCHING: Most belchers suffer from underactive stomachs. To relieve the feeling of fullness and bloating that accompanies the condition they swallow air, the belching return of which seems to relieve them. Other belches occur in normal stomachs after an especially large meal, when fullness and bloating are genuine. Again, air may be swallowed or a bit of gas generated by the digestive process may escape into the gullet as a belch. A third rather common form of belch comes after swallowing effervescent soft drinks or beer, the carbon dioxide in which tends to erupt.

BREATH: The most likely reasons for persistent bad breath are gum ailments, diseased teeth and respiratory infections. Digestion is seldom involved. The reason that garlic and onions give trouble is that their aromatic chemicals are eliminated through the lungs as part of the breath, which explains why the husband who takes bicarbonate of soda after his lunchtime spaghetti marinara discovers that the alkalizer does not prevent him from reeking when he gets home five hours later. Alcohol also is eliminated by way of the lungs. Old-time physicians used to try to detect numerous ailments by smelling the breath, but the practice has gone out of fashion, largely because it was not reliably accurate. It is known that liver patients have a kind of "mouse" breath, persons in a diabetic coma exhale a tutti-frutti aroma, and persons dying of uremic poisoning and certain cancers also have distinctive breath. The bad taste in the mouth that we often associate with bad breath is brought about in most cases by deficient production of saliva. After we drink a lot of alcohol, for example, our kidneys excrete a great deal of water, some of which might otherwise have been

used in the production of saliva. Various particles of food and mucus that should have been washed away by saliva now remain, and don't taste good.

CHILLS: Contrary to popular belief, wet feet, drafts and other environmental chills have no effect on the performance of the bowels. The chattering chills that accompany fever are another matter, signifying that the body is adjusting its thermostat at a new level. Fever is related to processes that inhibit the activities of stomach and intestines, accounting for the lack of appetite, the infrequency of bowel movements and the other symptoms of feverish illness.

COATED TONGUE: Physicians no longer pay as much attention to the appearance of the tongue as they used to. William Beaumont thought that Alexis St. Martin's tongue reflected the condition of his stomach, but no evidence of such a relationship between tongue and stomach was noted in the more recent experiments with Tom Little and other subjects. It is interesting, however, that when the stomach of a pernicious anemia patient becomes atrophied, so do some of the tissues of his tongue. It may be that the tongue is a treasure trove of medical information, but nobody has yet learned how to use it. As to coated tongue, it usually represents dryness, as in the dehydration that occurs after an alcoholic evening. Mucous particles are precipitated on the tongue instead of being washed away by saliva.

CRAMPS: An enormous variety of conditions are accompanied by distention or overactivity of certain intestinal muscles, a state of affairs that results in cramping pain. The belly cramp that supposedly punishes those who swim too soon after eating is more supposition than reality. Moderate exercise has no effect on the digestive organs or their musculature, even when undertaken immediately after a moderate meal. Obviously, someone who feels listless after a meal does not really feel like exercising and should not try to do so until he revives. Equally obviously, someone who fears cramps while swimming soon after eating can get cramps from the conviction, even if not from the swimming. On dry land,

cramps can safely be ignored unless they persist or recur, whereupon they should be referred to a physician.

DRUG REACTIONS: Almost any effective drug is also potentially poisonous. Accordingly, the body reacts to overdoses of most drugs with nausea, vomiting and diarrhea, just as it reacts to most poisons. The sore anus that happens after prolonged medication with antibiotics is a consequence of irritation by colonic fungi which are enabled to grow after the antibiotic has killed off the normal intestinal bacteria that usually hold such fungi in check. Some drugs like morphine, codeine and paregoric are constipating, affecting the intestinal muscles in such a way as to retard peristalsis.

DYSPEPSIA: An old-fashioned word for disturbed digestion of any kind, from the Greek for "bad cooking."

ENEMAS: We take many more enemas than necessary. Most physicians prescribe them only when preparing a patient for X-ray examination or surgery. They also are employed to reduce fever in children, although the same effect is usually achieved by sponging the skin with cool water or alcohol. There seldom is any good excuse for giving an enema to relieve constipation, although the high colonic, a fancy kind of enema, is highly popular. What it does, of course, is clean out the rectum and part of the lower colon, making the client feel purified. This placebo rigmarole is less amusing when used, as it so often is, in cases of arthritis and other conditions inaccurately blamed on "poisonous wastes." Because the course of a disease like arthritis fluctuates and progress is not easily evaluated, some arthritics swear by their "high colonics" and waste money on repeated courses of the alleged therapy.

FALLEN STOMACH: The slack, pendulous, underfunctioning stomach.

GAS: Everybody has it. Some pay no attention to it but others regard it, quite baselessly, as a sign that something is wrong. The only time a physician has any substantial interest in gas is if he suspects an intestinal obstruction; when he hears that the patient

is passing gas he knows that all is well. Similarly, after an abdominal operation the passage of gas indicates that the innards are recovering their normal functions. Various gases are involved in flatulence. One is swallowed air. Another is nitrogen released during the digestion of proteins. A third is carbon dioxide, generated when acid gastric juice meets alkaline pancreatic secretions in the duodenum. The odors are supplied by aromatic compounds that result from the action of intestinal bacteria on food. The popular belief that some foods are "gassy" may be well-founded, although research is sparse. It appears that vegetable proteins, such as those found in beans, are less completely dealt with in the small intestine than animal proteins are. This apparently means more undigested residue for the nourishment of intestinal microbes—and more gas. The bloated feeling that many people assume to be a result of gas is more often from an overloaded, underactive stomach. Or gaseous sensations in the upper abdomen may be a sign of heart attack, which manifests itself in that way as often as by chest pain. People who spend time and money trying to "cure" themselves of the mild discomfort that sometimes precedes flatulence are often amazed to find that the discomfort becomes even milder after they learn that occasional flatulence is of no importance and is, indeed, universal.

GASTRITIS: A catch-all term for supposed irritations of the stomach lining, most of which are non-existent. Modern physicians say "gastritis" only when referring to atrophic gastritis, the condition in which the stomach fails to secrete acid.

HANGOVER: Overdoses of alcohol poison the liver, among other internal organs, inducing the woeful sickness of hangover. The discomfort is compounded by the dehydration that ensues after the alcohol interferes with the action of a hormone that regulates urination.

HEADACHE: These are never brought on by food or by digestive upsets, but are usually responses to situations or events, just as stomach upsets are. Most often the pain results from the stretching of cranial blood vessels, an adaptive phenomenon. Investigation

reveals no clear chemical relation between the drinking of alcoholic beverages and the headache that so often occurs on the morning after. It appears that people who thoroughly enjoy themselves at parties and go home with conscience and self-esteem intact are likely to suffer no headache the next day, regardless of how much they may have drunk. But party-goers remorseful about drinking or oppressed by the need to behave in a prescribed manner among people they fear or dislike are susceptible to thumping "hangover headaches" after drinking very little. Frequent headaches not associated with alcoholic revelry are also attributable to the individual's way of interpreting and adapting to the stresses of life. An extraordinarily high proportion of people with migraine live by a code that requires them to do everything longer, harder and better than anyone else. For the headaches that ensue, dietary treatment offers only temporary, placebo relief. The cure, as in so many other illnesses, is most likely to be achieved through increased understanding of oneself and one's relations with the world.

HICCUPS: These cannot be prevented by eating slowly and cannot be induced by eating rapidly. They are unconnected with diet or digestion. The chief factors are irritation of the diaphragm, abscesses in the abdomen or a nerve disturbance that rarely is of any importance.

INTESTINAL FLU: Another catch-all term, applied to the sudden nausea, vomiting, cramps, fever or diarrhea (or all five) that represent the body's response to infection by any of numerous viruses. Potentially serious viruses like polio may produce only "intestinal flu" in persons lightly affected. Medicinal treatment is of no avail against these infections. Time is the only known cure. If diarrhea or fever are present, physicians advise increased intake of fluids, especially salty broth, to counteract the effects of dehydration. And aspirin relieves the headache that sometimes accompanies fever. Antibiotics work only when the illness involves a bacterial infection.

UPSIDE-DOWN STOMACH: A not very descriptive term that refers to a hernia of the diaphragm. The stomach does not turn

turtle, but part of it may move into the chest above the rupture. If gastric juice becomes trapped in the part of the stomach that has become displaced, either the gullet or the stomach lining may become eroded, causing ulceration, bleeding and pain. Surgical correction is almost invariably successful.

Conclusion

Working with Your Doctor

BY STEWART WOLF, M.D.

Prevailing myths about diet and digestion have needed debunking for a long time. Richard Carter's book, which I have read in manuscript, attends to the need with admirable care, comprehensiveness and clarity. The author's exuberantly iconoclastic attitude toward some of our most cherished medical shibboleths may be shocking to some readers, yet he renders a substantial service in demonstrating that all too many medical concepts owe their persistence to tradition rather than to reality. He also takes pains to overturn some of the comfortable convictions that the general public derives from the costly gospel of Madison Avenue, and he demolishes certain health fads that have achieved deplorable popularity when the press has been over-stimulated by incomplete medical evidence.

I confess that I am the source of many of the author's facts and that my pleasure over his manuscript is dampened by embarrassment at his frequent references to work in which I have participated. The embarrassment might have outweighed the pleasure if the book were not as constructive as it is. Amid the din of crashing

idols one discerns the author's deep commitment to the little guy, John Q. Public, who bears the brunt and pays the bills.

The theme of the book is, of course, that John Q. should seek health not through shibboleth, nostrum or fad but through wiser management of his life. The implication follows that to restore health is to deal with the patient's way of life, which means dealing with the patient as a person rather than as a mere assemblage of symptoms. Such care requires the establishment of genuine communication between patient and physician. Because this all-important patient-physician relationship is more easily described than accomplished in an era when many patients demand quick diagnoses and push-button cures, the author has asked me to contribute a chapter on the subject, illuminating the patient's responsibilities as well as those of the physician.

For the convenience of the reader, this chapter's frame of reference is the digestive tract and its performance. We begin with the knowledge that the tract and all its appendages are connected by nerves to the higher centers of the brain and that the digestive organs act up in one way or another under the influence of those connections. As with the government of men, there are many levels of regulation and control of the digestive organs. Local control mechanisms may be superseded by regulatory activity at higher and higher levels. Each of these, in turn, is subsidiary to connections from the highest parts, the interpretive areas of the brain which seem to take precedence in governing the behavior of the digestive organs.

As the author points out many times in his book, major disturbances in the stomach, colon and other parts of the digestive tract may occur when a person finds himself in a frustrating, annoying, or depressing situation. The bodily changes may occur even when the patient is only partly aware or altogether unaware of his own emotional reactions, and yet may be more intense and more long lasting than those induced by powerful drugs. The physician who seeks to recognize situations of substantial emotional significance must induce his patient to talk freely so that he

may understand the patient's way of looking at life.

A naturally humanitarian attitude and an interest in people have always been considered important attributes of the good doctor. Only in the last few years, however, has it become recognized as desirable for the doctor to have a penetrating knowledge of psychology and a lively interest in what makes people behave as they do. Fifty years ago a doctor could do an effective job with a lot less than this, but that was the day when hospital wards were filled with cases of typhoid fever and large numbers of people died of pneumonia and diphtheria. Today such diseases as high blood pressure, peptic ulcer and diabetes predominate, diseases which seem to relate themselves in some way to the wear and tear of living. We have no drug or formula to cure or prevent them.

Antibiotics and hygienic living have diminished the prevalence of infectious diseases, but they have not simplified the doctor's job; they have only altered the requirements. Modern doctors should be able to detect the evidence of strain in patients who appear to be perfectly adjusted and may be totally unaware of serious emotional problems. By understanding the patient, by getting a glimpse of the world through the patient's eyes, the good doctor accomplishes the first steps in treatment. The patient himself can do much to help his physician with the difficult and time-consuming task of getting to know him. In these pages I shall try to indicate some ways in which the patient may make the most of his doctor, how he may help him do his best.

One of the physician's most troublesome handicaps is the tendency of many patients to think of medical care in terms of electronic equipment, glassware, pills and potions. If a visit to the doctor does not yield a prescription for drugs, a diet, or at least special exercises many patients will complain "nothing was done for me." Patients are often more satisfied to pay ten dollars for a seventy-five cent ampule of vitamin B injected by an office nurse in a minute or two than to pay the same for half an hour of the doctor's time spent in understanding the patient and helping him to understand himself.

To most patients medicine is a practical and technical matter. Thus, the work of the surgeon, being more tangible than that of the physician, is more intelligible to most patients. The skill and judgment of the wise and understanding physician seems somehow less as a commodity than does the knife or the needle. Such an evaluation by the public cannot but affect the attitudes and behavior of physicians even though most of them realize that the common and troublesome ills of the digestive tract, and indeed of the rest of the body, cannot be prescribed for without careful reference to the person who is ill. The patient should help them individualize the evaluation of the problem and the setting of goals of treatment to fit his own peculiar needs and characteristics, for the doctor must understand something of the patient's total adjustment in order to decide what he needs most.

For a patient to make the most of his physician's skill and judgment, it is important that he cooperate by talking as freely as he can to help the physician toward an understanding of him and his unique problem. The physician, of course, must want to listen and must provide the opportunity and the privacy required. His manner must be sufficiently reassuring so that the patient feels completely safe in his presence, but there is also much that the patient can do to help promote this kind of medical behavior. First he can avoid giving the "Fine, thanks, how are you?" answer to serious questions. If you are feeling a bit queasy and headachey after a late night and a friend on the street says, "Good morning, Joe, how are you?" you would rarely say, "Well, I'll tell you, Jack, I've got a full feeling in the head and I'm a little nauseated." You are much more likely to respond, "Fine, thanks, how are you?" as you pass him and go about your business. This behavior is appropriate for an exchange of greetings on the street, but it obstructs your doctor in his efforts to find out what is really behind your trouble. Since conversational formulas of that sort are so characteristic of our ordinary social relationships, it is difficult to abandon them in a doctor's office. Yet it is essential to abandon them.

Another way in which the patient often hampers a doctor's efforts to understand him is in being less than candid when describing his attitudes toward others, especially members of his family. Too many patients think it disloyal to give such feelings a frank airing. Other patients, of course, are not fully aware of just how they do feel. Here the doctor must rely on the subtle cues he picks up from the conversation. One man who suffered severe migraine headaches provided such a clue. In the early part of the interview with his doctor he described himself as an easy-going, uncompetitive person. Later in the discussion it developed that as a territorial manager for a tire company he had held the sales record for twelve years. The physician therefore elected to dwell on this seeming discrepancy and continued to guide the conversation toward the man's work. Shortly there emerged the true picture of the patient as a compulsive, hard-driving, perfectionistic individual, who had struck a pose of casual unconcern. His major conflicts lay in the general area of frustrated ambition, and this in turn was linked to a lifelong need to make his mother proud of him.

Such a patient's need to bolster a not altogether accurate image of himself is a frequent hurdle for the inquiring physician. For example, in the first two interviews with one middle-aged married woman she made a considerable point of her attitude of independence and self-reliance. On the third occasion, however, she said, spontaneously, "You know I talked about being independent. I came to the conclusion that I have never been independent in my life. I've always had to have some man to lean on. I just look back and see it. I've always had a man in my life to fall back on—not consciously. I didn't realize it until yesterday or this morning. I've never been independent. Did you know that before I told you? Here I've turned forty and am realizing for the first time I've been one of the most dependent people that ever was, and didn't even know it. How can you fool yourself for that long?" We all do fool ourselves, especially about ourselves.

Suggestive evidence that a patient is struggling, consciously or unconsciously, with an unrealistic image of himself may manifest

itself in his dress, gestures or manner of speech. The physician may learn a good deal when he compares his patient's appearance and behavior with those of other members of the family.

Not only with behavior but with words as well, the patient may mislead instead of contributing toward the physician's understanding of him. All too often, and usually unintentionally, he leads the doctor off the track. He may, for example, persistently switch the conversation back to a discussion of his symptoms. Most symptoms, as such, are not emotionally charged. Therefore, the patient may consciously or unconsciously seek relief or comfort in a detailed and circumstantial account of symptoms, thereby avoiding a discussion of painful topics. Because important emotional troubles are usually disagreeable to think about, a normal brain may protect its owner from awareness of conflicts and problems in his own life adjustment. Thus, without any conscious effort at dissembling, the patient makes himself appear other than he is.

Fortunately, the experienced eye and ear of the physician can usually detect clues of underlying trouble. The patient's choice of words, and his tone of voice, as well as subtle implications of gesture and behavior may speak volumes. Important areas of personal conflict may be suggested by things forgotten or left unsaid. Useful information can be gleaned *whenever the patient can be induced to talk to his physician.* Experts in the interrogation of prisoners of war have learned that if a prisoner can be induced to talk about anything he will betray considerable useful information unintentionally, and often without awareness. Patients likewise reveal a good deal about themselves when they talk. The difference is that whatever a patient reveals to his doctor may ultimately redound to his own benefit.

Among the ways in which patients may tend to mislead themselves and their friends, if not their attentive physician, is a device which Shakespeare assigned to Hamlet's mother, when she says, "The lady doth protest too much, methinks." Such an example was provided by a young woman of thirty-three who had bouts of intense abdominal pain. Several specialists had treated

her, but nothing they did seemed to help. She was a cheerful, friendly, attractive girl who seemed very well balanced indeed. She did have serious inner conflicts, however, and they ultimately were found to be responsible for her pain. In the early interviews, although she praised her husband to the skies, the physician got the impression from what she said and the way she said it that he was more of an "Eagle Scout" than a husband. Finally, it became evident that her pain was more intense on mornings after intercourse with him. Later, working with both her and her husband, it was possible for the physician to help her resolve some fundamental problems. Her pains disappeared completely and she remained well for years. Her difficulty was not uncommon. Every day such patients pose serious problems to surgeons and physicians who, without benefit of what can be learned by talking with the patients, subject them to costly and futile surgical operations.

Often a patient will protect himself, either consciously or unconsciously from discussing a sensitive topic by giving a slightly irrelevant reply to a question. In court this is referred to as the non sequitur, and it may be enormously helpful to physician and patient alike in revealing deep-seated attitudes. Equally helpful is the gratuitous remark, a statement unprovoked by what has gone before, except for unconscious associations in the patient's mind. As already noted, there are also important implications in the patient's general appearance, dress, manner of speaking, posture and reactions in the company of others. A particular choice of words may be very revealing. For example, a woman who averred a very close relationship to her husband continually referred to him as "mister." Later in the interview she acknowledged a consuming hatred for him.

It is extremely difficult to tell whether what has been revealed or suggested by a patient represents conscious or unconscious material. The line between that of which we are aware and that of which we are not is a hazy one. Like the equator it has no dimensions, and when one is close to it it may be hard to tell on which side of it one is standing. It doesn't really matter. One young

woman with ulcerative colitis claimed a very close relationship with her father whom she said was "one of the most wonderful people that has ever lived in this world." When asked to indicate his extraordinary qualities she mentioned only his brilliant mind and described him as "a walking encyclopedia." The description of her "intimacy" with her father is informative chiefly because it doesn't reflect any real intimacy. After speaking of being extremely close to him she described him in terms of intellectual accomplishment, rather than in terms of warmth, understanding and generosity. The patient had excelled at every stage in her school work and in her social life, but denied having felt under pressure to do well. She said that her parents had never pushed her but were simply "quietly happy" with her extraordinary achievements. As for herself, she said: "I just drifted through life taking everything in my stride."

Such a strong need to excel rarely, if ever, occurs spontaneously. The exaggerated, unnatural smoothness implied in "They were quietly happy" and "I just drifted" were thought by the physician to indicate serious conflict within herself about these strivings. These remarks, viewed against her statements about her close relationship with her father, suggested that her "understanding" of her father was really a matter of striving to please him. These inferences were confirmed later when she suddenly became aware of her true motives, long forgotten. She remembered many painful events and associations centering mainly about her father and their ambivalent relationship. As the subtle cues of her own unconscious mental processes appeared in her conversation she began to recognize them herself and quickly began to reconstruct old hopes and dreams, conflicts and resentments.

Here was a patient trying very hard to help her physician. Her efforts were rewarded by being able to remember what she had completely put out of her mind years before. It seemed likely that the hatreds and resentments which she had harbored and buried deep within her were important in the algebraic sum of factors responsible for her ulcerative colitis. In any case, she made a substantial recovery after she and her physician had worked together

for several sessions learning to understand something of her real self.

The great importance of skill and understanding in talking with patients calls for a physician with a wide range of personal experience, a comprehensive view of the phenomena of health and disease and a sensitive approach to each patient and his individual problem. The development of these qualities must soon become a subject with special emphasis in medical schools. The modern emphasis on "the whole patient" calls for the development of a "whole doctor." Patients can do much to encourage this development by bringing up to date their expectations of their physicians.

One of the most formidable obstacles to an effective patient-physician relationship is the patient's overt or covert expression of hostility. Unless the physician is thoroughly prepared he may spoil his relationship with his patient by reacting with a counter hostility. Most physicians naturally expect from their patients evidence of cooperativeness, and perhaps even signs of gratitude. When these are lacking, and especially when the patient's manner suggests that the physician may not be doing all that he can, the physician is tempted to be cool, hurt or outraged. What the patient needs, on the other hand, at such a time, is warmth and understanding. If the physician can accept his patient's hostility without retaliation and without ever so subtle a sign of rejection, the patient has found a resource precious beyond compare. The power of such a simple gesture to heal the bruised spirit, to instill confidence in the anxious man, is immense.

In most instances, of course, the hostility expressed toward the physician is actually felt for someone closer to the patient—a wife, mother or boss toward whom the patient feels unable to express hostility. The physician is merely a surrogate but as such may be very helpful. Physicians are not saints, however, and especially when pressed, worried or fatigued they may not be able to accept even a small measure of the patient's hostility. The patient is well advised, therefore, to try to understand his physician and to

restrain expressions of hostility when possible and appropriate. First, however, he must learn to recognize evidences of hostility in himself, and that may be a difficult job. Such manifestations vary from the laconic answer to questions, so that the physician must work hard to get the story, to such statements as "you know I have been coming to you for three months and I don't see any change except that I am $200 poorer. I still have my pain." Such a remark is as surely a symptom of illness as is vomiting, but it may be difficult for a harassed physician to take. As the patient attempts to control as best he can where and when he vomits, so he should watch his expressions of hostility directed vicariously at the doctor, not avoiding them altogether, because their free expression has therapeutic value, but taking care not to spoil an important relationship with the doctor.

A question often asked is "How much knowledge of psychiatry is required for the general physician to function effectively?" The answer is simple and straightforward: He needs to know at least as much about emotions as he does about drugs or microbes. How he can get such knowledge is a question less easy to answer, however. A large proportion of doctors now practicing medicine went through medical schools in which little or no psychiatry was taught to the medical students. That handicap did not rob all such physicians of the opportunity of learning psychiatry. In fact some of them have eventually become psychiatrists. A major portion of every doctor's fund of knowledge is learned years after graduation from medical school by virtue of his own curiosity and powers of observation. He learns what he thinks is important to him. Until recently comparatively few doctors have been aware of how important a keen understanding of the patient as a person really is.

Among important sources of stress for human beings are social situations, relationships, goals and expectations which stem from the culture in which the patient lives. Thus, the more both patient and physician understand about the way we in America live, the social values and patterns of our human relationships, the more

incisive will be the approach to the illness. For example, one of the most pressing sources of conflict in our culture derives from a disturbance in the man-woman relationship typified on the one hand by the domineering wife who really wants to be dominated by her husband, and on the other hand by a hesitant, frustrated husband, troubled by feelings of inadequacy. The physician often can be of great service by helping the patient bring his or her ambivalent feelings into consciousness, or if already conscious, into clear perspective.

One such patient was greatly helped by a single interview quoted here. He was a thirty-four-year-old television repair man whose physician had established a diagnosis of duodenal ulcer. He had been suffering with heartburn and periodic pain in the upper abdomen for five years and had been a stutterer since childhood. Both his parents were dead. His mother had been an anxious, overprotective and domineering woman. In describing his mother's behavior he said, "She hated me to have magazines and a-a-a- books and I used to have to hide them under my s-s-s-sweater to introduce them into the house. Little things like that and she didn't like my friends at all. I couldn't have them around and always urging me to go to work. I hadn't even graduated from high school. I worked after a while and I left home." The physician asked, "Why did she do it?" "I think that she was a disturbed person, very much so," answered the man. "So I had a very harsh, I mean it was very hard for me and that's one of the reasons I feel that my own son ought not to be a-a-a- exposed to all that. Of course this is very ironic that a-a-a- I married a woman who in s-s-s-some ways resembles her, but a-a-." "In what way does she resemble her?" asked the physician. "Well, in that she so often acts in an irrational way and she's aggressive."

The patient then told of difficulties related to his speech impediment, of the poverty of his Russian-Jewish immigrant parents and of his wife's higher social station. "My parents were always very, very poor, extremely poor; hers were a rung higher, awfully, awfully much higher." He also told of his interest in art,

literature and philosophy, and of his having been a conscientious objector in World War II. In the course of the discussion he frequently expressed resentment of his wife and her rigid, domineering behavior.

The physician did very little but listen. Nevertheless the patient lost his symptoms (as far as his abdominal discomfort was concerned) and he was not heard from for five months, at which time he was continuing to feel well. He had somehow managed to grasp the reins in his marital relationship. He had left his wife temporarily and had negotiated an agreement to go back to her on condition that he be the head of the household. He said, in a letter to the physician, "I've been able to eat anything without experiencing discomfort. It seems to me that my stomach is in better shape now than it has been in years. I've eaten highly spiced foods, fried, and pickled foods, delicatessen, etc., and have felt fine."

After two more months he wrote again. "My wife accepted my terms and I went back to live with her. I've not regretted it. My wife has unquestionably changed, in an almost miraculous manner. I have been fairly easy-going with her and have not abused the authority I have demanded. Whenever she has shown any signs of slipping back, however, I have reminded her that I meant business and would not tolerate any reversion to our old relationship. Our life together is in consequence no longer a constant battle for supremacy. Now that she has accepted my leadership my wife tells me she is happier and far less tense. Others have commented on the change in her, too."

In a subsequent letter, nine months after the original visit, he wrote: "The miracle of her personality change remains intact (it is incidentally the only miracle I have come in contact with)."

The objective of this chapter has been to make it clear that it is important to most patients, especially those with chronic diseases (and most digestive diseases in this country are chronic), that the physician have an understanding of the patient, his attitudes, goals and aspirations. This takes time and skill on the part of the

physician, but it also requires understanding and cooperation from the patient. There is a natural tendency not to share one's inner thoughts with other people, and sometimes even if a patient is motivated to share his thoughts he is discouraged by the attitude of the physician: "I was a little afraid of him," or "He didn't seem interested," or "He seemed to be having troubles of his own." It is of course vital that the physician be able to put the patient at his ease and inspire his confidence, since good communication requires the patient's cooperation. Skill in gaining the patient's confidence is no mere technical matter; it's achieved on the basis of the physician's personal qualities. He must have an interest in and sympathy for people and their problems. He must believe in their potential for a more constructive adjustment. He must be able to "give out" encouragement and support, even in the face of the patient's hostility. The physician needs patience. He must be willing to carry responsibility while his patient is slowly working through misinterpretations and poor decisions to a better adjustment.

Often the physician must worry along with little progress or settle for a limited objective, realizing that rejecting the patient or "giving him up as a bad job" would be destructive. The physician must be willing to learn and to afford the time and energy which learning requires. Finally, the physician needs restraint. He must be particularly careful not to express contempt, ridicule or disapproval, directly or indirectly, by word or gesture. He must avoid pressing a course of action which the patient may not be able or ready to accept, however obvious the course may seem to the physician. Especially he must assiduously avoid using his patient to work out his own problems to enhance his own feeling of security. Few of us can meet in full these stiff personal requirements, but nevertheless each is important. Together they spell maturity of character, emotional balance, and self-discipline. These qualities, sought for in candidates for admission to medical school, are not necessarily reflected in college grades or in tests of "aptitude."

It is important for the patient to realize that when he comes to a

physician he is not passing his problems along to the physician to solve but is rather soliciting the physician's help. The patient must work, too. Occasionally the physician may greet the patient with the words, "What seems to be the trouble?" Occasionally the patient's reply is, "Well you are the doctor, you are supposed to figure that out." Such a statement reflects a lack of understanding of the patient-physician relationship and the way in which diagnoses are made and treatment carried out. Sometimes a patient will object to a physician's line of questioning, "I don't see what that has to do with the pain in my stomach." Patients are often unaware of the importance of meticulous attention to detail on the part of their physician. Instead, they are impressed with the speed with which a physician makes a diagnosis without considering the degree of accuracy or completeness of the physician's understanding. "He just took one look at me and knew what to prescribe."

Expecting something to be prescribed is probably the greatest barrier to an effective attack on a difficult health problem. Such an attitude enables the patient to take a detached position vis-à-vis his illness and dump it in the physician's lap, as it were. As already pointed out, most digestive ailments require that the patient not only learn to understand but actually *work* on the problem with the physician.

Sometimes the physician will prefer not to press the patient to talk about himself and may even turn the conversation away from personal problems. This is usually because he has detected signs that a too great or rapid awareness of his real attitudes and feelings may throw the patient into a depression or a panic, thereby compounding the difficulty. Here again a close rapport between patient and physician enhances greatly the likelihood of successful diagnosis and treatment.

In the modern view health is a matter of successful adaptation between man and all of the forces in his environment. The process of civilization, while protecting us from many of the tangible hazards such as falling prey to wild animals, exposure to the elements, famine, etc., has created for us new and often more

formidable stresses. Thus, in our day social and psychological adaptations are among the most significant, and since disturbances in man's ability to achieve his goals are known to be capable of profoundly disturbing his body and its functions, it becomes appropriate for the patient, especially the patient with digestive ills, to work with the physician and assist him in gaining as rapidly as possible a thorough grasp of the whole adaptive picture. As we have seen, this process often requires a good deal of conversation between the patient and physician. In such conversations the patient is tapping his physician's skills and insights, resources which are often of far greater importance to him than "shots," vitamins, placebos, or even antibiotics. If patients would learn to expect the analytical and understanding approach from their physicians they would soon get it, and with it an enhanced quality of medical care.

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